

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA**

CURWENSVILLE AREA SCHOOL
DISTRICT,

Plaintiff,

v.

META PLATFORMS, INC.; META
PAYMENTS INC.; SICULUS, INC.;
FACEBOOK OPERATIONS, LLC;
INSTAGRAM, LLC; SNAP INC.; TIKTOK,
LTD.; TIKTOK, LLC; TIKTOK, INC.;
BYTEDANCE LTD.; BYTEDANCE INC.;
GOOGLE LLC; and YOUTUBE, LLC,

Defendants.

MDL Case No. 4:22-md-03047-YGR

COMPLAINT

JURY TRIAL DEMANDED

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I. INTRODUCTION

1. This matter arises from an egregious breach of the public trust by Defendants Meta Platforms, Inc. (hereinafter, “Meta Platforms”), Facebook Holdings, LLC, Facebook Operations, LLC, Instagram, LLC (hereinafter, “Instagram”) (collectively—“Meta”), together with Snap Inc. (hereinafter, “Snap”), TikTok, Inc. (hereinafter, “TikTok”), and ByteDance, Inc (hereinafter, “ByteDance”) (hereinafter, collectively, “Non-Meta,” and, together with “Meta,” “Defendants”). Defendants own and operate some of the largest social media companies in the world.

2. In the past decade, youth in America have engaged with Defendants’ products at an exponential rate. This increase in youth using social media is the direct result of Defendants’ calculated efforts to encourage and addict adolescents to endlessly use their products – Instagram, Facebook, TikTok, Snapchat, and YouTube.

3. Defendants do not charge their users for these products, but instead receive money from advertisers who pay a premium to target advertisements to specific categories of people as studied and sorted by Defendants’ algorithms. Thus, Defendants generate revenue based upon the total time users spend on the application, which directly correlates with the number of advertisements that can be shown to each user.

4. The defects in Defendants’ products vary somewhat, but all Defendants’ products have inadequate age verification measures; insufficient parental controls; algorithmically-generated, endless feeds to keep users scrolling in an induced “flow state;” “intermittent variable rewards” that manipulate dopamine delivery; and mechanisms to reward extreme usage while producing harmful social comparison. These defects, along with others discussed throughout this complaint, cause Defendants’ products to be harmfully addictive, which in turn causes additional related injuries.

5. Excessive screen time is especially harmful to adolescents' mental health, sleep patterns, and emotional well-being. Yet, Defendants' products lack any warnings (to users in general, minor users, or their parents) that foreseeable product use can cause injury to users' mental and physical health, rendering the products unreasonably dangerous. Defendants' products contain designs intended to circumvent parental oversight.

6. Defendants know that minors are much more vulnerable to serious psychological harm through social media use than adults. Nevertheless, Defendants knowingly seek to grow the use of their products by minors through designs, algorithms, and policies that promote addiction, compulsive use, and other severe mental harm.

7. Rather than making meaningful changes to safeguard the health and safety of its users, Defendants have consistently chosen to prioritize profit over safety by continuing to implement product designs that increase the frequency and duration of users' engagement, resulting in the pernicious harms described in greater detail below.

8. In Fall 2021, Frances Haugen, a former Facebook employee turned whistleblower, came forward with internal documents showing that Meta was aware that its products cause significant harm to its users, especially our children. Non-Meta Defendants' social media products have similar designs and mechanism of action resulting in similar addictive qualities and harmful outcome to minor users. Students, both in Plaintiff's community and around the country, are being victimized and exploited by Defendant social media products. Defendants, through addictively designed products fueled by extreme data tracking, are ruthlessly extracting every dollar possible from youth with callous disregard for the harm to their mental and physical health.

9. As a result, the U.S. Surgeon General, Commissioner Bedoya of the Federal Trade Commission, and leading children's health groups have all sounded the alarm - adolescents and

children are suffering a mental health crisis. These authorities highlight the dramatic increases in the mental health needs of minors. The Surgeon General has linked this to social media's relentless focus on profits over safety: “[b]usiness models are often built around maximizing user engagement as opposed to safeguarding users' health and ensuring that users engage with one another in safe and healthy ways.”¹

10. Similarly, Commissioner Bedoya of the Federal Trade Commission observed that “we live in an attention economy. . . . In an attention economy, companies very literally compete for our thoughts, our time, our minds. No one should be surprised if that economy affects our mental health.”² There is no question that children are facing a growing mental health crisis of epidemic proportions. There is no question: Defendants are a substantial cause of this crisis.

11. This youth mental health crisis is infecting all aspects of education. Students are experiencing record rates of anxiety, depression, and other mental health issues because of Defendants' intentional conduct. These students perform worse in school, are less likely to attend school, more likely to engage in substance use and to act out, all of which directly affects Plaintiff's ability to fulfill their educational mission.

12. Therefore, as part of their mission as educational institutions which shape the minds of youth, provide mental health services to their students. Plaintiff trains their teachers and staff to screen students for mental health symptoms and provide or refer them to services, such as those offered by school-based health clinics operated in partnership with behavioral health

¹ Protecting Youth Mental Health, *The U.S. Surgeon General's Advisory*, 2021, <https://www.hhs.gov/sites/default/files/surgeon-general-youth-mental-healthadvisory.pdf>.

² Commissioner Alvaro M. Bedoya, Federal Trade Commission, Prepared Remarks Before the National Academies of Sciences, Engineering & Medicine Meeting of the Committee on the Impact of Social Media on the Health and Wellbeing of Children & Adolescents (February 7, 2023).

agencies. Plaintiff continues to hire mental health professionals to keep up with the ever-growing need of its students, but there is no end in sight. Plaintiff needs much more.

13. Plaintiff requires funding to develop a long-term plan to deal with the mental health crisis and address the record rates of depression, anxiety, suicidal ideation, and the other tragic byproducts caused by Defendants. Plaintiff needs Defendants to take accountability for their bad acts. It needs Defendants to stop targeting youths for profit and it needs them to use alternative designs for their products that they know are the driving force behind the current mental health crisis for the students in Plaintiff's school systems.

14. Plaintiff brings claims for public nuisance and negligence arising from Defendants' unreasonably dangerous social media products and their failure to warn of such dangers. Defendants knew or, in the exercise of ordinary care, should have known that their social media products were harmful to a significant percentage of their minor users and failed to re-design their products to ameliorate these harms or warn minor users and their parents of dangers arising out of the foreseeable use of their products. Defendants intentionally created an attractive nuisance to children, but simultaneously failed to provide adequate safeguards from the harmful effects they knew were occurring. Plaintiff has in turn been harmed as a school district serving many youths suffering from these mental health and physical injuries.

II. JURISDICTION AND VENUE

15. This Court has subject-matter jurisdiction pursuant to 28 U.S.C. § 1332(a) because the matter in controversy exceeds \$75,000 and is between citizens of different states.

16. This Court has personal jurisdiction over Defendants because Plaintiff's claims arise out of Defendants' contacts with this district.

17. Venue is proper in this district pursuant to 28 U.S.C. § 1391(b)(2) because a substantial part of the events or omissions giving rise to Plaintiff's claims occurred in this district.

III. PARTIES

A. Plaintiff

18. Plaintiff Curwensville Area School District ("Plaintiff") is in Clearfield County, Pennsylvania, contains two schools—one elementary school and one high school—and serves approximately 1,036 students. Plaintiff's office is located at 650 Beech Street, Curwensville, PA 16833.

B. Meta Defendants

19. Meta Platforms, Inc. ("Meta") is a multinational technology conglomerate, having its principal place of business in Menlo Park, California. Meta develops and maintains social media products, communication products, and electronic devices, including Facebook and Instagram.³ Meta Platforms was originally incorporated in Delaware on July 29, 2004, as "TheFacebook, Inc." On September 20, 2005, the company changed its name to "Facebook, Inc." On October 28, 2021, the company assumed its current designation. While Plaintiff has attempted to identify the specific Meta Platforms subsidiary(s) that committed each of the acts alleged in this Complaint, Plaintiff was not always able to do so, in large part due to ambiguities in Meta Platforms' and its subsidiaries' own documents, public representations, and lack of public information. However, upon information and belief, Meta Platforms oversees the operations of its various products and subsidiaries, some of which have been identified and are listed below. For this reason, unless otherwise specified, the shorthand "Meta" contemplates the apparent control that Meta Platforms

³ These products include Facebook (its self-titled app, Messenger, Messenger Kids, Marketplace, Workplace, etc.), Instagram (and its self-titled app), and a line of electronic virtual reality devices called Meta Quest.

wields over its subsidiaries' overall operations and, therefore, further refers to its various subsidiaries and predecessors. To the extent this assumption is incorrect, the knowledge of which Meta Platforms subsidiary, current or former, is responsible for specific conduct is knowledge solely within Meta's possession, the details of which Plaintiff should be permitted to elucidate during the discovery phase.

20. Meta Platforms' subsidiaries include but may not be limited to: Facebook Holdings, LLC; Facebook Operations, LLC; Instagram, LLC; and a dozen other entities whose identity or relevance is presently unclear.

21. Facebook Holdings, LLC was incorporated in Delaware on March 11, 2020, and is a wholly owned subsidiary of Meta Platforms. Facebook Holdings is primarily a holding company for entities involved in Meta Platforms' supporting and international endeavors, and its principal place of business is in Menlo Park, California.

22. Facebook Operations, LLC was incorporated in Delaware on January 8, 2012, and is a wholly owned subsidiary of Meta Platforms. Facebook Operations is likely a managing entity for Meta Platforms' other subsidiaries, and its principal place of business is in Menlo Park, California.

23. Instagram, LLC was founded by Kevin Systrom and Mike Krieger in October 2010. In April 2012, Meta Platforms purchased the company for \$1 billion (later statements from Meta Platforms have indicated the purchase price was closer to \$2 billion). Meta Platforms reincorporated the company on April 7, 2012, in Delaware. Currently, the company's principal place of business is in Menlo Park, CA. Instagram is a social media platform tailored for photo and video sharing.

C. Defendant Snap, Inc.

24. Snap is a Delaware corporation with its principal place of business in Santa Monica, California. Snap designs, owns, and operates the Snapchat social media platform, an application that is widely marketed by Snap and available to users throughout the United States. Snapchat is a platform for engaging in text, picture, and video communication. The platform is also for editing and dissemination of content. Snapchat was founded in 2011, by three Stanford college students, Reggie Brown, Evan Spiegel, and Bobby Murphy

D. TikTok Defendants.

25. TikTok, Inc. is a California corporation with its principal place of business in Culver City, California. TikTok designs, owns, and operates the TikTok social media platform, an application that is widely marketed by TikTok and available to users throughout the United States. TikTok is known as a video-sharing application, where users can create, share, and view short video clips.

26. ByteDance, Inc. is a Delaware corporation with its principal place of business in Mountain View, California. ByteDance designs, owns, and/or operates TikTok, and designs, owns, and/or operates the TikTok social media platform, an application that is widely marketed by TikTok and available to users throughout the United States.

E. YouTube Defendants.

27. Defendant Google LLC (“Google”) is a limited liability company organized under the laws of the state of Delaware, and its principal place of business is in Mountain View, California. Google LLC is a wholly owned subsidiary of XXVI Holdings Inc., and the managing member of YouTube, LLC. Google LLC transacts or has transacted business in this District and throughout the United States. At all times material to this Complaint, acting alone or in concert

with others, Google LLC has advertised, marketed, and distributed its YouTube video sharing platform to consumers throughout the United States. At all times material to this Complaint, acting alone or in concert with YouTube, LLC, Google LLC formulated, directed, controlled, had the authority to control, or participated in the acts and practices set forth in this Complaint.

28. Defendant YouTube, LLC is a limited liability company organized under the laws of the state of Delaware, and its principal place of business is in San Bruno, California. YouTube, LLC is a wholly owned subsidiary of Google LLC. YouTube, LLC transacts or has transacted business in this District and throughout the United States. At all times material to this Complaint, acting alone or in concert with Defendant Google LLC, YouTube, LLC has designed, advertised, marketed, and distributed its YouTube social media platform to consumers throughout the United States. At all times material to this Complaint, acting alone or in concert with Google LLC, YouTube, LLC formulated, directed, controlled, had the authority to control, or participated in the acts and practices set forth in this Complaint.

IV. FACTUAL ALLEGATIONS

A. GENERAL FACTUAL ALLEGATIONS

1. **Defendants have targeted children as a core market.**

29. Each Defendant has designed, engineered, marketed, and operated its products to maximize the number of children who download and use them compulsively. These designs are powerfully addictive and succeed in capturing youth. Researchers studying the effect social media has on the brain have shown that social media exploits “the same neural circuitry” as “gambling and recreational drugs to keep consumers using their products as much as possible.”⁴

⁴ Addiction Center, *What is Social media Addiction?*, <https://www.addictioncenter.com/drugs/social-media-addiction/> (last updated Oct. 26, 2023).

30. Children are more vulnerable users and have more free time on their hands than their adult counterparts. Because children use Defendants' products more, they see more ads, and as a result generate more ad revenue for Defendants. Young users also generate a trove of data about their preferences, habits, and behaviors. That information is Defendants' most valuable commodity. Defendants mine and commodify that data, including by selling to advertisers the ability to reach incredibly narrow tranches of the population, including children. Each Defendant placed its products into the stream of commerce and generated revenues through the distribution of those products at the expense of the consuming public and Plaintiff.

31. This exploitation of children, including students at Plaintiff's schools, has become central to Defendants' profitability. Recognizing the vulnerability of children under 13, particularly in the Internet age, Congress enacted the Children's Online Privacy Protection Act ("COPPA") in 1999.⁵ COPPA regulates the conditions under which Defendants can collect, use, or disclose the personal information of children under 13. Under COPPA, developers of products and websites that are directed to or known to be used by children under 13 cannot lawfully obtain the individually identifiable information of such children without first obtaining verifiable consent from their parents.⁶ Even apart from COPPA, it is well established under the law that children lack the legal or mental capacity to make informed decisions about their own well-being.

32. COPPA was enacted precisely because Congress recognized that children under age 13 are particularly vulnerable to being taken advantage of by unscrupulous website operators.

⁵ See 15 U.S.C. §§ 6501-6506.

⁶ The FTC recently clarified that acceptable methods for obtaining verifiable parent consent include: (a) providing a form for parents to sign and return; (b) requiring the use of a credit/card online payment that provides notification of each transaction; (c) connecting to trained personnel via video conference; (d) calling a staffed toll-free number; (e) asking knowledge-based questions; or (f) verifying a photo-ID from the parent compared to a second photo using facial recognition technology. Federal Trade Commission, *Complying with COPPA: Frequently Asked Questions*, July 2020, <https://www.ftc.gov/business-guidance/resources/complying-coppa-frequently-asked-questions>.

As a June 1998 report by the FTC observed, “[t]he immediacy and ease with which personal information can be collected from children online, combined with the limited capacity of children to understand fully the potentially serious safety and privacy implications of providing that information, have created deep concerns about current information practices involving children online.”⁷ The same report observed that children under the age of 13 “generally lack the developmental capacity and judgment to give meaningful consent to the release of personal information to a third party.”⁸

33. Contemporaneous testimony by the Chairman of the FTC observed that the Internet “make[s] it easy for children to disclose personal information to the general public without their parents’ awareness or consent. Such public disclosures raise safety concerns.”⁹ Further, “the practice of collecting personal identifying information directly from children without parental consent is clearly troubling, since it teaches children to reveal their personal information to strangers and circumvents parental control over their family’s information.”¹⁰

34. None of the Defendants conduct proper age verification or authentication. Instead, each Defendant leaves it to users to self-report their age. This unenforceable and facially inadequate system allows children under 13 to easily create accounts on Defendants’ apps.

35. This is particularly egregious for two reasons. First, Defendants have long been on notice of the problem. For instance, in May 2011, Consumer Reports reported the “troubling news”

⁷ Privacy Online: A Report to Congress, Federal Trade Commission (1998) at 13, <https://www.ftc.gov/sites/default/files/documents/reports/privacy-online-report-congress/priv-23a.pdf>.

⁸ *Id.*

⁹ S. 2326, Children’s Online Privacy Protection Act of 1998: Hearing Before the U.S. Sen. Subcom. On Communications, Comm. On Commerce, Science, and Transportation, 105th Cong. 11 (1998) (statement of Robert Pitofsky, Chairman, Federal Trade Commission).

¹⁰ *Id.*

that 7.5 million children under 13 were on Facebook.¹¹ Second, given that Defendants have developed and utilized age-estimation algorithms for the purpose of selling user data and targeted advertisements, Defendants could readily use these algorithms to prevent children under 13 from accessing their products, but choose not to do so. Instead, they have turned a blind eye to collecting children's data in violation of COPPA.

36. Defendants have done this because children are financially lucrative, particularly when they are addicted to Defendants' apps.

2. Children are uniquely susceptible to harm from Defendants' products.

37. Youth are also particularly vulnerable to injury from the environment of extreme social comparison, which Defendants' products create and manipulate for profit. Social comparisons on social media are frequent and are especially likely to be upward and negative, as social media provides a continuous stream of information about other people's accomplishments.¹²

38. Past research suggests that social comparisons occur automatically; when individuals encounter information about another person, their own self-perceptions will be affected. The sheer number of posts in a News Feed, each offering a thumbnail sketch of each person's carefully curated and predominantly ostentatious content, yields numerous opportunities for social comparison.

39. Although people do not typically post false information about themselves online, they do engage in selective self-presentation and are more likely to post eye-catching content. Defendant's algorithms powerfully sort and promote the most eye-catching content, such as

¹¹ Emily Bazelon, *Why Facebook is After Your Kids*, N.Y. Times (Oct. 12, 2011), <https://www.nytimes.com/2011/10/16/magazine/why-facebook-is-after-your-kids.html>.

¹² Jin Kyun Lee, *The Effects of Social Comparison Orientation on Psychological Well-Being in Social Networking Sites: Serial Mediation of Perceived Social Support and Self-Esteem*, *Current Psychology* (2020), <https://link.springer.com/content/pdf/10.1007/s12144-020-01114-3.pdf>.

content flaunting lifestyle, appearance, or success. As a result, individuals browsing their News Feeds are more likely to see posts about friends' exciting social activities rather than dull days at the office, affording numerous opportunities for comparisons to seemingly better-off others. Individuals with vacillating levels of self-esteem and certitude, characteristics notoriously endemic to the teenage cohort, are particularly oriented to making frequent and extreme upward social comparisons on social media, which in turn threatens their mental health. Social-media-induced social comparison often results in a discrepancy between the ideal self and the real self, thus evoking a sense of depression, deprivation, and distress, resulting in an overall aggravation of one's mental state.¹³

40. Since the early 2000s, studies have shown that frequent upward social comparison results in lower self-esteem and reduced overall mental health.¹⁴ It has also long been known that individuals who are more likely to engage in self-comparison are likewise more likely to have negative outcomes when using social media.

41. To cope with wavering self-esteem, digitally native adolescents often become envious of others and resort to cyberbullying to deconstruct the point of comparison's perceived superiority and preserve an increasingly delicate ego. These natural dynamics in youth are

¹³ This schism between the ideal self and the real self, and the attendant dissatisfaction with reality, is further exacerbated by Meta's use of physical-augmentation technology, which allows users to utilize photo and video filters to make remove blemishes, make the face appear thinner, and lighten the skin-tone, all to make themselves appear more "attractive." Appearance-altering filters are widely-used across Defendants' products. Many filters are designed to make users appear more attractive, according to criteria developed by Defendants—they remove blemishes, make the face appear thinner, and lighten skin-tone. Especially in combination with the products' general-feed algorithm, these filters can cause users to make false comparisons between their real-life appearances and the appearances of the people they see in Facebook and Instagram content. These features can also cause users to make negative comparison between their appearance with a filter and without one. As discussed below, Meta has long been aware of the harm these features can cause.

¹⁴ Claire Midgley, *When Every Day is a High School Reunion: Social Media Comparisons and Self-Esteem* (2020), https://www.researchgate.net/publication/342490065_When_Every_Day_is_a_High_School_Reunion_Social_Media_Comparisons_and_Self-Esteem.

exacerbated to psychologically injurious levels by Defendants' products' progressively toxic environment, which is discussed in further detail below.

42. Defendants' products contain image altering filters that cause mental health harms in multiple ways.¹⁵ First, because of the popularity of these editing tools, many of the images teenagers see have been edited by filters and it can be difficult for teenagers to remain cognizant of the use of filters while viewing content, resulting in a false reality where all other users on the products appear better looking than they are in fact, often in an artificial way. By comparing their real-life appearance to the edited appearance of others online, teens' perception of their physical features becomes negative. Second, teenagers often prefer the way they look using filters, noticing an increase in interaction and positive responses when their photos are edited with filters. Many young users believe they are only attractive when their images are edited, not as they appear naturally. Third, the specific changes filters make to individuals' appearance can cause negative obsession or self-hatred surrounding aspects of their appearance. The filters alter specific facial features such as eyes, lips, jaw, face shape, face slimness, etc., features that often require medical intervention to alter in real life.

43. In a 2016 study, 52 percent of girls said they use image filters every day, and 80 percent have used an app to change their appearance before the age of 13.¹⁶ In fact, 77 percent of girls reported trying to change or hide at least one part of their body before posting a photo of themselves and 50 percent believe they did not look good without editing.¹⁷ Filters, especially in

¹⁵ Anna Haines, *From 'Instagram Face' To 'Snapchat Dysmorphia': How Beauty Filters Are Changing The Way We See Ourselves*, Forbes (Apr. 27, 2021 at 1:19 PM EDT), <https://www.forbes.com/sites/annahaines/2021/04/27/from-instagram-face-to-snapchat-dysmorphia-how-beauty-filters-are-changing-the-way-we-see-ourselves/?sh=3c32eb144eff>.

¹⁶ *Id.*

¹⁷ Haines, *supra* ("In October, Instagram announced that it would be removing "all effects associated with plastic surgery" from its filter arsenal, but this appears to mean all effects explicitly associated with (footnote continued)

combination with other product features, directly cause body image issues, eating disorders, body dysmorphia, and related issues.¹⁸ As one study of 481 university students found, spending more time viewing selfies can increase dissatisfaction with one's own face, spending more time looking at selfies (and reviewing their likes and comments) can cause users to draw more comparisons between themselves and others, prompting even more self-criticism.¹⁹ Relatedly, a psychodermatologist stated, "these apps subconsciously implant the notion of imperfection and ugliness generating a loss of confidence."²⁰

44. In another recent study, even users that report a higher initial level of self-esteem, felt they looked 44 percent worse before their image was edited using a filter. When a filter increases a gap between how individuals want to look and how they feel they actually look, it "reduces their self-compassion and tolerance for their own physical flaws."²¹

45. The dangers associated with teenager's proclivity to engage in protracted upward social comparison while on social media is compounded by Defendants deft and discreet

plastic surgery, such as the ones called "Plastica" and "Fix Me." Filters that give you Instagram Face will remain.").

¹⁸ See Sian McLean, Susan Paxton, Eleanor Wertheim, & Jennifer Masters, *Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent girls*, 48 Int'l J. of Eating Disorders 1132, 1133 (Aug. 27, 2015), <https://pubmed.ncbi.nlm.nih.gov/26311205/> (presenting a 2015 study involving 101 adolescent girls, more time spent editing and sharing selfies on social media raised their risk of experiencing body dissatisfaction and disordered eating habits.); Jing Yang, Jasmine Fardouly, Yuhui Wang, & Wen Shi, *Selfie-Viewing and Facial Dissatisfaction among Emerging Adults: A Moderated Mediation Model of Appearance Comparisons and Self-Objectification*, 17 Int'l J. of Env't Res. and Pub. Health 672, 672 (Jan. 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7013747/>; Scott Griffiths, Stuart Murray, Isabel Krug, & Sian McLean, *The Contribution of Social Media to Body Dissatisfaction, Eating Disorder Symptoms, and Anabolic Steroid Use Among Sexual Minority Men*, 21 Cyberpsychology Behavior, and Soc. Networking 149, 149 (Mar. 1, 2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5865626/>.

¹⁹ Yang et al., *supra*.

²⁰ Genesis Rivas, *The Mental Health Impacts of Beauty Filters on Social Media Shouldn't Be Ignored – Here's Why*, InStyle (Sept. 14, 2022 at 2:05PM), <https://www.instyle.com/beauty/social-media-filters-mental-health>.

²¹ Ana Javornik, Ben Marder, Marta Pizzetti, & Luk Warlop, *Research: How AR Filters Impact People's Self-Image*, Harvard Business Review (December 22, 2021), <https://hbr.org/2021/12/research-how-ar-filters-impact-peoples-self-image>.

construction of an atmosphere capable of exploiting the impulse control issues of even the most mature adults, thereby unleashing upon the public a product that is predictably highly addictive.

46. In sum, this perilous amalgamation of intense psychological vulnerability and targeted exploitation foreseeably results in an increased risk of a variety of harms for today's youth, including, but not limited to, social media addiction, withdrawal—from friends, family, and social and academic advancement—lack of focus, anxiety, body dysmorphia, eating disorders, death resulting from eating disorders, depression, difficulty sleeping, fatigue, headaches, migraines, loss of vision, eye strain, self-harm, and suicide among other harms.

3. Defendants designed their products to attract and addict youth.

47. Instagram, Facebook, TikTok, Snap, and YouTube employ many similar defective and dangerous product features that are engineered to induce more use by young people—creating an unreasonable risk of compulsive use and addiction.²² For instance, all five products harvest user data and use this information to generate and push algorithmically tailored “feeds” of photos and videos. And all five include methods through which approval can be expressed and received, such as likes, hearts, comments, shares, or reposts. This section explains the psychological and social mechanisms exploited by these and other product defects.

48. First, Defendants' products are designed and engineered to methodically, but unpredictably, space out dopamine-triggering rewards with dopamine gaps. Unpredictability is key because, paradoxically, intermittent variable rewards (or “IVR”) create stronger associations (conditioned changes in the neural pathway) than fixed rewards. Products that use this technique

²² See Kevin Hurler, *For Sites Like Instagram and Twitter, Imitation Is the Only Form of Flattery*, Gizmodo (Aug. 16, 2022), <https://gizmodo.com/instagram-tiktok-snapchat-facebook-meta-1849395419> (“Over the last decade, some of the most popular social media apps have blatantly ripped off features from some of the other most popular social media apps, in a tech version of Capture the Flag where the only losers are the users who are forced to persist through this cat- and-mouse game.”).

are highly addictive or habit forming. IVR is based on insights from behavioral science dating back to research in the 1950s by Harvard psychologist B. F. Skinner. Skinner found that laboratory mice respond most voraciously to unpredictable rewards. In one famous experiment, mice that pushed a lever received a variable reward (a small treat, a large treat, or no treat at all). Compared with mice who received the same treat every time, the mice who received only occasional rewards were more likely to exhibit addictive behaviors such as pressing the lever compulsively. This exploitation of neural circuitry is exactly how addictive products like slot machines keep users coming back.

49. The IVR aspect of slot machines is limited by the fact that they deliver rewards in a randomized manner, irrespective of the person pulling the lever. By contrast, Defendants' products are designed to purposely withhold and release rewards on a schedule its algorithms have determined is optimal to heighten a specific user's craving and keep them using the product. For example, TikTok will at times delay a video it knows a user will like until the moment before it anticipates the user would otherwise log out. Instagram's notification algorithm will at times determine that a particular user's engagement will be maximized if the app withholds "Likes" on their posts and then later delivers them in a large burst of notifications.

50. Defendants' use of IVR is particularly effective and dangerous for adolescents, given the incomplete aspects of their brain maturation—including lack of impulse control and reduced executive functions.

51. There are multiple types of dopamine neurons that are connected with distinct brain networks and have distinct roles in motivational control. Apart from the dopamine reward loop triggered by positive feedback, other dopamine neurons are impacted by salient but non-rewarding

stimuli and even painful-aversive stimuli.²³ Defendants' products capitalize on this by algorithmically ranking photos and videos that "engage" users because they present a dopamine pay-off, including novel, aversive, and alarming images.

52. Second, there are multiple types of dopamine neurons that are connected with distinct brain networks and have distinct roles in motivational control. Apart from the dopamine reward loop triggered by positive feedback, other dopamine neurons are impacted by salient but non-rewarding stimuli and even painful-aversive stimuli.²⁴ Defendants' products capitalize on this by algorithmically ranking photos and videos that "engage" users because they present a dopamine pay-off, including novel, aversive, and alarming images.

53. Third, dangerous and defective features in Defendants' products manipulate young users through their exploitation of "reciprocity"—the psychological phenomenon by which people respond to positive or hostile actions in kind. Reciprocity means that people respond in a friendly manner to friendly actions, and with negative retaliation to hostile actions.²⁵ Phillip Kunz best illustrated the powerful effect of reciprocity through an experiment using holiday cards. Kunz sent cards to a group of complete strangers, including pictures of his family and a brief note.²⁶ People whom he had never met or communicated with before reciprocated, flooding him with holiday cards in return.²⁷ Most of the responses did not even ask Mr. Kunz who he was—they simply responded to his initial gesture with a reciprocal action.²⁸

²³ J.P.H. Verharen, Yichen Zhu, and Stephan Lammel, *Aversion hot spots in the dopamine system* 64 *Neurobiology* 46-52 (March 5, 2020) <https://doi.org/10.1016/j.conb.2020.02.002>.

²⁴ *Id.*

²⁵ Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, 14(3) *J. Econ. Persps.* 159–81 (2000), [https://www.researchgate.net/profile/Ernst-Fehr-](https://www.researchgate.net/profile/Ernst-Fehr-2)

²⁶ Phillip R. Kunz & Michael Woolcott, *Season's Greetings: From my status to yours*, 5(3) *Soc. Sci. Rsch.* 269–78 (Sept. 1976), [https://doi.org/10.1016/0049-089X\(76\)90003-X](https://doi.org/10.1016/0049-089X(76)90003-X).

²⁷ *Id.*

²⁸ *Id.*

54. Products like Instagram and Snapchat exploit reciprocity by, for example, automatically telling a sender when their message is seen, instead of letting the recipient avoid disclosing whether it was viewed. Consequently, the recipient feels more obligated to respond immediately, keeping users on the product.²⁹

55. Fourth, Defendants' products addict young users by preying on their already-heightened need for social comparison and interpersonal feedback-seeking.³⁰ Because of their relatively undeveloped prefrontal cortex, young people are already predisposed to status anxieties, beauty comparisons, and a desire for social validation.³¹ Defendants' products encourage repetitive usage by dramatically amplifying those insecurities.

56. Mitch Prinstein, Chief Science Officer for the American Psychology Association, has explained that online and real-world interactions are fundamentally different.³² For example, in the real world, no public ledger tallies the number of consecutive days friends speak. Similarly, “[a]fter you walk away from a regular conversation, you don’t know if the other person liked it, or if anyone else liked it.”³³ By contrast, a product defect like the “Snap Streak” creates exactly such

²⁹ Von Tristan Harris, *The Slot Machine in Your Pocket*, Spiegel Int'l (July 27, 2016), <https://www.spiegel.de/international/zeitgeist/smartphone-addiction-is-part-of-the-design-a-1104237.html>.

³⁰ Jacqueline Nesi & Mitchell J Prinstein, *Using Social Media for Social Comparison and Feedback-Seeking: Gender and Popularity Moderate Associations with Depressive Symptoms*, 43 J. Abnormal Child Psych. 1427–38 (2015), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5985443/>.

³¹ Susan Harter, *The Construction of the Self: Developmental and Sociocultural Foundations* (Guilford Press, 2d ed., 2012) (explaining how, as adolescents move toward developing cohesive self-identities, they typically engage in greater levels of social comparison and interpersonal feedback-seeking).

³² Zara Abrams, *Why young brains are especially vulnerable to social media*, Am. Psych. Ass'n (Aug. 25, 2022), <https://www.apa.org/news/apa/2022/social-media-children-teens>.

³³ *Id.*

artificial forms of feedback.³⁴ On Defendants' apps, friends and even complete strangers can publicly deliver (or withhold) dopamine-laced likes, comments, views, and follows.³⁵

57. The "Like" feature common to Defendants' products has an especially powerful effect on teenagers and can neurologically alter their perception of online posts. Researchers at UCLA used magnetic resonance imaging to study the brains of teenage girls as they used Instagram. They found that girls' perception of a photo changed depending on the number of likes it had generated.³⁶ That an image was highly liked—regardless of its content—instinctively caused the girls to prefer it. As the researchers put it, teens react to perceived "endorsements," even if likes on social media are often fake, purchased, or manufactured.³⁷

58. The design of Defendants' products also encourages unhealthy, negative social comparisons, which in turn cause body image issues and related mental and physical disorders. Given adolescents' naturally vacillating levels of self-esteem, they are already predisposed to comparing "upward" to celebrities, influencers, and peers they perceive as more popular.³⁸ Defendants' products turbocharge this phenomenon. On Defendants' apps, users disproportionately post "idealized" content,³⁹ misrepresenting their lives. That is made worse by

³⁴ A "Snap Streak" is designed to measure a user's Snapchat activity with another user. Two users achieve a "Snap Streak" when they exchange at least one Snap in three consecutive 24-hour periods. When successively longer "Streaks" are achieved, users are rewarded with varying tiers of emojis.

³⁵ Abrams, *supra*.

³⁶ Lauren E. Sherman et al., *The Power of the Like in Adolescence: Effects of Peer Influence on Neural and Behavioral Responses to Social Media*, 27(7) *Psychol Sci.* 1027 (2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5387999/>

³⁷ *Id.*; see also Stuart Wolpert, The teenage brain on social media, UCLA Newsroom (May 31, 2016), <https://newsroom.ucla.edu/releases/the-teenage-brain-on-social-media>.

³⁸ Nesi & Prinstein, *supra* ("Upward comparison occurs when people compare themselves to someone they perceive to be superior[], whereas a downward comparison is defined by making a comparison with someone perceived to be inferior[.]"); Jin- Liang wang, Hai-Zhen Wang, James Gaskin, & Skyler Hawk, *The Mediating Roles of Upward Social Comparison and Self-esteem and the Moderating Role of Social Comparison Orientation in the Association between Social Networking Site Usage and Subjective Well-Being*, *Frontiers in Psychology* (May 2017), <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.00771/full>.

³⁹ Nesi & Prinstein, *supra*.

appearance-altering filters built into Defendants' apps, which underscore conventional (and often racially biased) standards of beauty, by allowing users to remove blemishes, make bodies and faces appear thinner, and lighten skin-tone. Defendants' products provide a continuous stream of these filtered and fake appearances and experiences.⁴⁰ That encourages harmful body image comparisons by adolescents, who begin to negatively perceive their own appearance and believe their bodies, and indeed their lives, are comparatively worse.⁴¹

59. Fifth, Defendants' respective product features work in combination to create and maintain a user's "flow-state": a hyper-focused, hypnotic state, where bodily movements are reflexive, and the user is totally immersed in smoothly rotating through aspects of the social media product.⁴²

60. As discussed in more detail below, defective features like the ones just described can cause or contribute to the following injuries in young people: eating and feeding disorders; depressive disorders; anxiety disorders; sleep disorders; trauma- and stressor-related disorders; obsessive-compulsive and related disorders; disruptive, impulse-control, and conduct disorders; suicidal ideation; self-harm; and suicide.⁴³ Students in Plaintiff's schools have suffered many of these injuries, and continue to suffered from addiction and related injuries caused by defendants' products.

⁴⁰ Lee, *supra*.

⁴¹ *Id.*; see also Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: a moderated mediation model of problematic Facebook use, age, neuroticism, and extraversion* at 3, BMC Psych. 10, 279 (2022), <https://doi.org/10.1186/s40359-022-00990-7> (explaining that youth are particularly vulnerable because they "use social networking sites for construing their identity, developing a sense of belonging, and for comparison with others");

⁴² See, e.g., *What Makes TikTok so Addictive?: An Analysis of the Mechanisms Underlying the World's Latest Social Media Craze*, Brown Undergraduate J. of Pub. Health (2021), <https://sites.brown.edu/publichealthjournal/2021/12/13/tiktok/> (describing how IVR and infinite scrolling may induce a flow state in users).

⁴³ See, e.g., Gugushvili et al., *supra* (collecting sources).

4. **Millions of kids use Defendants' products compulsively.**

61. Defendants have been staggeringly successful in their efforts to attract young users to their apps. In 2021, 32% of 7- to 9-year-olds,⁴⁴ 49% of 10- to 12-year-olds,⁴⁵ and 90% of 13- to 17-year-olds in the United States used social media.⁴⁶ A majority of U.S. teens use Instagram, TikTok, Snapchat, and/or YouTube. Thirty-two percent say they “wouldn’t want to live without” YouTube, while 20% said the same about Snapchat, and 13% said the same about both TikTok and Instagram.⁴⁷

62. U.S. teenagers who use Defendants’ products are likely to use them every day. Sixty-two percent of U.S. children ages 13-18 use social media daily.⁴⁸ And daily use often means constant use. About one-in-five U.S. teens visit or use YouTube “almost constantly,” while about one-in-six report comparable usage of Instagram.⁴⁹ Nearly half of U.S. teens use TikTok at least “several times a day.”⁵⁰ In one study, U.S. teenage users reported checking Snapchat thirty times a day on average.⁵¹

63. Teenagers know they are addicted to Defendants’ products: 36% admit they spend too much time on social media.⁵² Yet they can’t stop. Of the teens who use at least one social

⁴⁴ *Sharing Too Soon? Children and Social Media Apps*, C.S. Mott Child’s Hosp. Univ. Mich. Health (Oct. 18, 2021), https://mottpoll.org/sites/default/files/documents/101821_SocialMedia.pdf.

⁴⁵ *Id.*

⁴⁶ *Social Media and Teens*, Am. Acad. Child & Adolescent Psychiatry (Mar. 2018), https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/Social-Media-and-Teens-100.aspx; *see also* Victoria Rideout et al., *The Common Sense Census: Media Use by Tweens and Teens*, 2021 at 5, Common Sense Media (2022), https://www.commonSenseMedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf.

⁴⁷ *Id.* at 31.

⁴⁸ *Id.*

⁴⁹ Emily Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10, 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

media product “almost constantly,” 71% say quitting would be hard. Nearly one-third of this population—and nearly one-in-five of all teens—say quitting would be “very hard.”⁵³

64. Notably, the more teens use Defendants’ apps, the harder it is to quit. Teens who say they spend too much time on social media are almost twice as likely to say that giving up social media would be hard, compared to teens who see their social media usage as about right.⁵⁴

65. Despite using social media frequently, most young people don’t particularly enjoy it. In 2021, only 27% of boys and 42% of girls ages 8-18 reported liking social media “a lot.”⁵⁵ Moreover, one survey found that young people think social media is the main reason youth mental health is getting worse.⁵⁶ About twice as many of the surveyed youth believed that social media is the main reason for declining mental health than the next likely cause, and over seven times more believed it to be the main cause rather than drugs and alcohol.⁵⁷

5. Defendants’ products have created a youth mental health crisis.

66. Nearly a decade of scientific and medical studies demonstrate that dangerous features engineered into Defendants’ products—particularly when used multiple hours a day—can have a “detrimental effect on the psychological health of [their] users,” including compulsive use, addiction, body dissatisfaction, anxiety, depression, and self-harming behaviors such as eating disorders.⁵⁸

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ Victoria Rideout et al., *Common Sense Census: Media use by tweens and teens, 2021* at 34, Common Sense Media (2022), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf.

⁵⁶ Headspace (2018) *National youth mental health survey 2018*, National Youth Mental Health Foundation (2018), <https://headspace.org.au/assets/headspace-National-Youth-Mental-Health-Survey-2018.pdf>

⁵⁷ *Id.*

⁵⁸ See, e.g., Fazida Karim et al., *Social Media Use and Its Connection to Mental Health: A Systemic Review*, Cureus Volume 12(6) (June 15, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7364393/>; Alexandra R. Lonergan et al., Protect me from (footnote continued)

67. Addiction and compulsive use of Defendants' products can entail a variety of behavioral problems including but not limited to: (1) a lessening of control, (2) persistent, compulsive seeking out of access to the product, (3) using the product more, and for longer, than intended, (4) trying to cut down on use but being unable to do so, (5) experiencing intense cravings or urges to use, (6) tolerance (needing more of the product to achieve the same desired effect), (7) developing withdrawal symptoms when not using the product, or when the product is taken away, (8) neglecting responsibilities at home, work, or school because of the intensity of usage, (9) continuing to use the product even when doing so interferes and causes problems with important family and social relationships, (10) giving up important or desirable social and recreational activities due to use, and (11) continuing to use despite the product causing significant harm to the user's physical and mental health.

68. Many of these injuries can be long-lasting, if not lifelong. For example, the long-term effects of eating disorders can include: (1) dermatological effects to the nails and hair; (2) gastrointestinal illnesses, such as gastroparesis or hypomotility of the colon; (3) impacts to the endocrine system, such as glycolic or metabolic conditions, bone loss, and hormonal conditions; (4) nervous system effects, such as gray matter brain loss or atrophy; (5) skeletal system effects, such as bone loss; (6) cardiovascular effects, such as structural heart damage, mitral valve prolapse, or fluid around the heart; and (7) fertility issues.⁵⁹

my selfie: Examining the association between photo-based social media behaviors and self-reported eating disorders in adolescence, *Int. J. of Eating Disorders* 756 (Apr. 7, 2020), <https://onlinelibrary.wiley.com/doi/epdf/10.1002/eat.23256>.

⁵⁹ See, e.g., Anorexia Nervosa, *Cleveland Clinic*, <https://my.clevelandclinic.org/health/diseases/9794-anorexia-nervosa>; Bulimia Nervosa; Cleveland Clinic <https://my.clevelandclinic.org/health/diseases/9795-bulimia-nervosa>.

69. Each Defendant has long been aware of this research, but chose to ignore or brush it off. Yet, as discussed at length below, Defendants conducted some of the research themselves—and then hid their unfavorable findings from the public.

70. Scientists have studied the impacts of the overuse of social media since at least 2008, with social media addiction recognized in literature around that time after a pervasive upsurge in Facebook use.⁶⁰ The Bergen Social Media Addiction Scale assesses social media addiction along six core elements: 1) salience (preoccupation with the activity), 2) mood modification (the behavior alters the emotional state), 3) tolerance (increasing activity is needed for the same mood-altering effects), 4) withdrawal (physical or psychological discomfort when the behavior is discontinued), 5) conflict (ceasing other activities or social interaction to perform the behavior), and 6) relapse (resuming the behavior after attempting to control or discontinue it).⁶¹

71. Beginning in at least 2014, researchers began demonstrating that addictive and compulsive use of Defendants' products leads to negative mental and physical outcomes for kids.

72. In 2014, a study of 10- to 12-year-old girls found that increased use of Facebook was linked with body image concerns, the idealization of thinness, and increased dieting.⁶² (This study was sent to Mark Zuckerberg in 2018, in a letter signed by 118 public health advocates.)⁶³

⁶⁰ Tim Davies & Pete Cranston, *Youth Work and Social Networking: Interim Report*, The National Youth Agency (May 2008), https://www.researchgate.net/publication/233911484_Youth_Work_and_Social_Networking_Final_Research_Report.

⁶¹ Cecilie Andreassen et al., *The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: a large-scale cross-sectional study*, 30(2) *Psychol. of Addictive Behav.*, 252-262 (2016), <http://dx.doi.org/10.1037/adb0000160>.

⁶² Marika Tiggemann & Amy Slater, *NetTweens: The Internet and body image concerns in preteenage girls*, 34(5), *J. Early Adolesc.* 606-620 (June 2014), <https://journals.sagepub.com/doi/epub/10.1177/0272431613501083>.

⁶³ Campaign for a Commercial-Free Childhood, *Letter to Mark Zuckerberg Re: Facebook Messenger Kids* (Jan. 30, 2018), <https://fairplayforkids.org/wp-content/uploads/archive/devel-generate/gaw/FBMessengerKids.pdf>.

73. In 2016, a study demonstrated that young people who frequently use Defendants' products are more likely to suffer sleep disturbances than their peers who use them infrequently.⁶⁴ Defendants' products, driven by IVR algorithms, deprive users of sleep by sending push notifications and emails at night, prompting children to re-engage with the products when they should be sleeping. Disturbed and insufficient sleep is associated with poor health outcomes,⁶⁵ including increased risk of major depression—by a factor of more than three—⁶⁶ and future suicidal behavior in adolescents.⁶⁷ The American Academy of Sleep Medicine has recommended that, in a 24-hour period, children aged 6–12 years should regularly sleep 9–12 hours and teenagers aged 13–18 years should sleep 8–10 hours.⁶⁸

74. In another 2016 study, 52% of girls said they use image filters every day, and 80% reported using an app to change their appearance before the age of 13.⁶⁹ In fact, 77% of girls

⁶⁴ Jessica C. Levenson et al., *The Association Between Social Media Use and Sleep Disturbance Among Young Adults*, 85 Preventive Med. 36–41 (Apr. 2016), <https://www.sciencedirect.com/science/article/abs/pii/S0091743516000025>.

⁶⁵ Jessica C. Levenson et al., *The Association Between Social Media Use and Sleep Disturbance Among Young Adults*, 85 Preventive Med. 36–41 (Apr. 2016), <https://www.sciencedirect.com/science/article/abs/pii/S0091743516000025>; National Institute of Mental Health. 2016. The teen brain: 6 things to know, <https://www.nimh.nih.gov/health/publications/the-teen-brain-still-under-construction/index.shtml>; R. Sather & A. Shelat, *Understanding the teen brain*, <https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=1&ContentID=3051>.

⁶⁶ E. Roberts & H Doung, *The Prospective Association between Sleep Deprivation and Depression among Adolescents Sleep*, Volume 37, Issue 2, 1 Feb. 2014.

⁶⁷ X. Liu, D. Buysse, *Sleep and youth suicidal behavior: a neglected field*, Current Opinion in Psychiatry (May 2006).

⁶⁸ S. Paruthi, L. Brooks, C. D'Ambrosio, et al, *Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: methodology and discussion*, 12 J Clin Sleep Med 1549–61 (2016).

⁶⁹ Anna Haines, *From “Instagram Face” to “Snapchat Dysmorphia”: How Beauty Filters Are Changing the Way We See Ourselves*, Forbes (Apr. 27, 2021), <https://www.forbes.com/sites/annahaines/2021/04/27/from-instagram-face-to-snapchat-dysmorphia-how-beauty-filters-are-changing-the-way-we-see-ourselves/?sh=3c32eb144eff>.

reported trying to change or hide at least one part of their body before posting a photo of themselves, and 50% believe they did not look good enough without editing.⁷⁰

75. In 2017, British researchers asked 1,500 teens to rate how Instagram, Snapchat, and YouTube affected them on certain well-being measures, including anxiety, loneliness, body image, and sleep.⁷¹ Teens rated all three products as having a negative impact on body image, “FOMO” (fear of missing out), and sleep. Teens also noted that Instagram and Snapchat had a negative impact on anxiety, depression, and loneliness.

76. In 2018, a *Journal of Social and Clinical Psychology* study examined a group of college students whose use of Instagram, Facebook, and Snapchat was limited to 10 minutes per day per platform. The study found that this limited-use group showed “significant reductions in loneliness and depression over three weeks” compared to a control group that used social media as usual.⁷²

77. In 2018, a systematic literature review of nine studies published in the *Indian Journal of Psychiatry* concluded that dangerous features in social networking products “contribute to increased exposure to and engagement in self-harm behavior, as users tend to emulate self-injurious behavior of others online, adopt self-injurious practices from self-harm videos, or are encouraged and acclaimed by others, thus normalizing self-injurious thoughts and behavior.”⁷³

⁷⁰ *Id.*

⁷¹ Royal Society for Public Health, *#StatusOfMind*, <https://www.rsph.org.uk/static/uploaded/d125b27c-0b62-41c5-a2c0155a8887cd01.pdf>; see also Jonathan Haidt, *The Dangerous Experiment on Teen Girls*, *The Atlantic* (Nov. 21, 2021), <https://www.theatlantic.com/ideas/archive/2021/11/facebook-s-dangerous-experiment-teen-girls/620767/>.

⁷² Melissa G. Hunt et al., *No More FOMO: Limiting Social Media Decreases Loneliness and Depression*, 37 *J. of Social & Clinical Psych.* (Dec. 5, 2018), <https://guilfordjournals.com/doi/epdf/10.1521/jscp.2018.37.10.751>.

⁷³ Aksha Memon et al., *The role of online social networking on deliberate self-harm and suicidality in adolescents: a systematized review of literature*, 60(4) *Indian J Psychiatry* 384-392 (Oct-Dec 2018), http://10.4103/psychiatry.IndianJPsychotherapy_414_17.

78. A 2019 survey of American adolescents ages 12-14 found that a user's displeasure with their body could be predicted based on their frequency of using social media (including Instagram and Facebook) and based on the extent to which they engaged in behaviors that adopt an observer's point-of-view (such as taking selfies or asking others to "rate one's looks"). This effect was more pronounced among girls than boys.⁷⁴

79. A third study in 2019 of more than 6500 American adolescents ranging in age from 12 to 15 years old found that those who used social media for 3 hours or more per day were more likely to suffer from mental health problems such as anxiety and depression.⁷⁵ Notably, this association remained significant even after adjusting for demographics, past alcohol and marijuana use, and history of mental health problems.⁷⁶

80. In 2020, a study of Australian adolescents found that investment in others' selfies (through likes and comments) was associated with greater odds of meeting criteria for clinical/subclinical bulimia nervosa, clinical/subclinical binge-eating disorder, night eating syndrome, and unspecified feeding and eating disorders.⁷⁷

⁷⁴ Ilyssa Salomon & Christia Spears Brown, *The Selfie Generation: Examining the Relationship Between Social Media Use and Early Adolescent Body Image*, Journal of Early Adolescence (Apr. 21, 2018), <https://journals.sagepub.com/doi/abs/10.1177/0272431618770809>.

⁷⁵ Kira Riehm et al., *Associations between time spent using social media and internalizing and externalizing problems among US youth*, 76(12) JAMA Psychiatry (2019), <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2749480>.

⁷⁶ Kira Riehm et al., *Associations between time spent using social media and internalizing and externalizing problems among US youth*, 76(12) JAMA Psychiatry (2019), <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2749480>.

⁷⁷ Alexandra R. Lonergan et al., *Protect Me from My Selfie: Examining the Association Between Photo-Based Social Media Behaviors and Self-Reported Eating Disorders in Adolescence*, Int'l J. of Eating Disorders (Apr. 7, 2020), <https://onlinelibrary.wiley.com/doi/epdf/10.1002/eat.23256>.

81. In 2020, a longitudinal study investigated whether “Facebook Addiction Disorder” predicted suicide-related outcomes, and found that children and adolescents addicted to Facebook are more likely to engage in self-injurious behavior, such as cutting and suicide.⁷⁸

82. In 2020, clinical research demonstrated an observable link between youth social media use and disordered eating behavior.⁷⁹ The more time young girls spend using Defendants’ products, the more likely they are to develop disordered eating behaviors.⁸⁰ And the more social media accounts adolescents have, the more disordered eating behaviors they exhibit.⁸¹

83. Eating disorders often occur simultaneously with other self-harm behaviors such as cutting and are often associated with suicide.⁸²

84. In a 2021 study, female undergraduates were randomly shown thinspiration (low body mass index and not muscular), fitspiration (muscular and exercising), or neutral photos.⁸³ Thinspiration and fitspiration images lowered self-esteem, even in those with a self-perceived healthy weight.⁸⁴

85. A 2022 study of Italian adolescent girls (12-17) and young women (18-28) found that Instagram’s image editing and browsing features, combined with an emphasis on influencer

⁷⁸ See, e.g., Julia Brailovskaia et al., *Positive mental health mediates the relationship between Facebook addiction disorder and suicide-related outcomes: a longitudinal approach*, 00(00) *Cyberpsychology, Behavior, and Social Networking* (2020), <https://doi.org/10.1089/cyber.2019.0563>; Jean M. Twenge et al., Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates Among U.S. Adolescents After 2010 and Links to Increased New Media Screen Time, 6 *Clinical Psych. Sci.* 3–17 (2018).

⁷⁹ Simon M. Wilksch et al., *The relationship between social media use and disordered eating in young adolescents*, 53 *Int’l J. Eating Disorders* 96–106 (2020), <https://pubmed.ncbi.nlm.nih.gov/31797420/>.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Sonja Swanson et al., *Prevalence and correlates of eating disorders in adolescents*, 68(7) *Arch Gen Psychiatry* 717-723 (2011), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5546800/>.

⁸³ Karikarn Chansiri & Thipkanok Wongphothiphan, *The indirect effects of Instagram images on women’s self-esteem: The moderating roles of BMI and perceived weight*, 00(0) *New Media & Society* 1–23 (2021), <https://journals.sagepub.com/doi/epub/10.1177/14614448211029975>.

⁸⁴ *Id.*

interactions, promulgated unattainable body ideals that caused users to compare their bodies to those ideals.⁸⁵ These trends were more prominent among adolescent girls, given their higher susceptibility to social pressures related to their bodies and given the physical changes associated with puberty.

86. In 2023, a study of magnetic resonance images demonstrated that compulsive use of Defendants' products measurably alters children's brains.⁸⁶ This study measured fMRI responses in 12-year-old adolescents who used Facebook, Instagram, and Snapchat over a three-year period and found that neural patterns diverged. Specifically, those who engaged in high social media checking behavior "showed lower neural sensitivity to social anticipation" than those who engaged in low to moderate checking behavior.⁸⁷

87. From 2009 to 2019, the rate of high school students who reported persistent sadness or hopelessness increased by 40% (to one out of every three kids).⁸⁸ The share of kids who seriously considered suicide increased by 36%, and those that created a suicide plan increased by 44%.⁸⁹

88. From 2007 to 2019, suicide rates among youth aged 10-24 in the United States increased by 57%.⁹⁰

⁸⁵ Federica Pedalino and Anne-Linda Camerini, *Instagram use and body dissatisfaction: The mediating role of upward social comparison with peers and influencers among young females*, 19(3) Int'l J of Environmental Research and Public Health 1543 (2022), <https://www.mdpi.com/1660-4601/19/3/1543>.

⁸⁶ Maria Maza et al., *Association of habitual checking behaviors on social media with longitudinal functional brain development*, JAMA Ped. (Jan. 3, 2023), <https://jamanetwork.com/journals/jamapediatrics/article-abstract/2799812>.

⁸⁷ *Id.*

⁸⁸ Protecting Youth Mental Health *supra*.

⁸⁹ *Id.*

⁹⁰ *Id.*

89. From 2007 to 2016, emergency room visits for youth aged 5-17 rose 117% for anxiety disorders, 44% for mood disorders, and 40% for attention disorders.⁹¹

90. By 2019, one-in-five children aged 3-17 in the United States had a mental, emotional, developmental, or behavioral disorder.⁹² Mental health issues are particularly acute among females.⁹³

91. On December 7, 2021, the United States Surgeon General issued an advisory on the youth mental health crisis.⁹⁴ The Surgeon General explained, “[m]ental health challenges in children, adolescents, and young adults are real and widespread. Even before the pandemic, an alarming number of young people struggled with feelings of helplessness, depression, and thoughts of suicide—and rates have increased over the past decade.”⁹⁵ Those “mental health challenges were the leading cause of disability and poor life outcomes in young people.”⁹⁶

92. On February 13, 2023, the CDC released new statistics revealing that, in 2021, one in three girls seriously considered attempting suicide.⁹⁷

⁹¹ Charmaine Lo, *Children’s mental health emergency department visits: 2007-2016*, 145(6) Pediatrics e20191536 (June 2020), <https://doi.org/10.1542/peds.2019-1536>

⁹² *U.S. Surgeon General Issues Advisory on Youth Mental Health Crisis Further Exposed by COVID-19 Pandemic*, U.S. Dep’t Health & Hum. Servs. (Dec. 14, 2021), <https://adasoutheast.org/u-s-surgeon-general-issues-advisory-on-youth-mental-health-crisis- further-exposed-by-covid-19-pandemic/>; see also Jean M. Twenge et al., *Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates Among U.S. Adolescents After 2010 and Links to Increased New Media Screen Time*, 6 Clinical Psych. Sci. 3–17 (2017), <https://doi.org/10.1177/216770261772337> (noting that mental health issues are particularly acute among females).

⁹³ *U.S. Surgeon General Issues Advisory on Youth Mental Health Crisis Further Exposed by COVID-19 Pandemic*, U.S. Dep’t Health & Hum. Servs. (Dec. 14, 2021), <https://adasoutheast.org/u-s-surgeon-general-issues-advisory-on-youth-mental-health-crisis- further-exposed-by-covid-19-pandemic/>

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ Azeen Ghorayashi & Roni Caryn Rabin, *Teen Girls Report Record Levels of Sadness, C.D.C. Finds*, N.Y. Times (Feb. 13, 2023), <https://www.nytimes.com/2023/02/13/health/teen-girls- sadness-suicide-violence.html>.

6. Defendants could have avoided harming Plaintiff and their students.

93. Each Defendant solicited customers, including Plaintiff's students, on the open market and encouraged the use of their defective apps.

94. Each Defendant offers its app to the consuming public with dangerous, standardized features and designs (discussed below) that users, like Plaintiff's students, cannot bargain to change.

95. Plaintiff's students (along with millions of other U.S. users) confer a benefit on each Defendant in exchange for using their respective products.

96. Each Defendant could have, but purposefully failed to, design its products to protect and avoid injury to kids and adolescent users, such as Plaintiff's students.

97. Each Defendant knew or should have known that adolescents' developing brains leave them relatively less able to delay gratification, control impulses, or resist immediately pleasurable social rewards.

98. Each Defendant knew or should have known that the more children use social media, the harder it is to quit.

99. Each Defendant knew or should have known that excessive use of its products has severe and wide-ranging effects on youth mental and physical health.

100. Each Defendant knew or should have known that youth are especially vulnerable to long-term harm from its addictive products.

101. Each Defendant knew or should have known that many of its users are under the age of 13, despite the limitations set out in COPPA.

102. Despite all that, each Defendant failed to adequately warn Plaintiff's students of the known risks and harms of using its products. Each Defendant avoided design changes that would

have increased youth safety. And each Defendant pressed ahead with changes designed to keep kids hooked, even though they knew or should have known those changes were risky.

103. Each Defendant was in a superior position to control the risks of harm, ensure the safety of its apps, insure against the defects, and spread the costs of any harm resulting from the defects.

104. Plaintiff and the consuming public did not have, and could not have had, as much knowledge as Defendants about Defendants' products and how they were defectively designed.

105. Consumers, including Plaintiff's student, could not have inspected the products before accepting them to learn of the defects or the harms that flow from the defects.

7. Plaintiff expressly disclaims any and all claims seeking to hold Defendants liable as the publisher or speaker of any content provided, posted, or created by third parties.

106. Plaintiff seeks to hold Defendants accountable for their own alleged acts and omissions. Plaintiff's claims arise from Defendants' status as the designer and marketer of dangerously defective social media products, not as the speaker or publisher of third-party content.

107. Plaintiff alleges that Defendants failed to warn minor users and their parents of known dangers arising from anticipated use of their social media products. None of Plaintiff's claims rely on treating Defendants as the publisher or speaker of any third-party's words. Plaintiff's claims seek to hold Defendants accountable for their own allegedly wrongful acts and omissions, not for the speech of others or for any attempts by Defendants to restrict access to objectionable content.

108. Plaintiff is not alleging that Defendants are liable for what third parties have said, but for what Defendants did or did not do.

109. None of Plaintiff's claims for relief set forth herein require treating Defendants as a speaker or publisher of content posted by third parties. Rather, Plaintiff seeks to hold Defendants

liable for their own speech, deliberate decisions, and their own silence in failing to warn of foreseeable dangers arising from the anticipated use of their products. Defendants could manifestly fulfill their legal duty to design reasonably safe products and furnish adequate warnings of foreseeable dangers arising out of their products, without altering, deleting, or modifying the content of a single third-party post or communication.

B. FACTUAL ALLEGATIONS AS TO META

110. Meta knowingly exploits its most vulnerable users—children throughout the world—to drive corporate profit. Meta operates the world’s largest family of social networks, enabling billions of users worldwide to connect, view, and share content through mobile devices, personal computers, and virtual reality headsets. A user does not have to pay to create an account on any Meta products. Instead of charging account holders to access the platform, Meta became one of the world’s most valuable companies from the sale of advertisement placements to marketers across its various products and applications.

111. For example, upon information and belief, Meta generated \$69.7 billion from advertising in 2019, more than 98% of its total revenue for the year. Meta can generate such revenues by marketing its user base to advertisers. Meta collects and analyzes data to assemble virtual dossiers on its users, covering hundreds if not thousands of user-specific data segments. This data collection and analysis allows advertisers to micro-target advertising to very specific categories of users, who can be segregated into pools or lists using Meta’s data segments. Only a fraction of these data segments come from content that is explicitly designated by users for publication or explicitly provided by users in their account profiles. Many of these data segments are collected by Meta through surveillance of each user’s activity on the platform and off the platform, including behavioral surveillance that users are not even aware of, like navigation paths,

watch time, and hover time. As Meta's user database grows, Meta can more efficiently addict users. As users spend more time on the platform, Meta creates increasingly detailed information about the users. At bottom, Meta uses this information to aim its paid marketing tools and increase its profits.

112. Two Meta products, Facebook and Instagram, rank among the most popular social networking products, with more than two billion combined users worldwide. It is estimated that nine out of ten teens use social media, with the average teen using social media roughly three hours per day. Given the delicate, developing nature of the teenage brain and Meta's creation of social media products designed to be addictive, it comes as no surprise that we are now grappling with the ramifications of Meta's growth-at-any-cost approach, to wit, a generation of children physiologically entrapped by products the effects of which collectively result in long-lasting adverse impact on their rapidly evolving and notoriously precarious mental health.

1. **The Facebook Product**

113. Facebook is a social networking product designed, developed, and maintained by Meta. Facebook was founded in 2004 and has become the largest social network in the world. As of October 2021, Facebook had approximately 2.9 billion monthly active users, approximately 2 billion of whom use Facebook every day.⁹⁸

114. When Facebook was founded in 2004, only students at certain colleges and universities could use the social media platform, and verification of college enrollment was required to access Facebook.

⁹⁸ See *id.*; S. Dixon, *Number of Daily Active Facebook Users Worldwide as of 3rd Quarter 2022 (in Millions)*, Statista (Oct. 27, 2022), <https://www.statista.com/statistics/346167/facebook-global-dau/>.

115. In 2005, Facebook expanded and became accessible to students at more universities around the world, after which Meta launched a high school version of Facebook that also required an invitation to join.

116. Meta later expanded eligibility for Facebook to employees of several companies, including Apple and Microsoft, and added more universities to its network.

117. In September 2006, Facebook became available to all internet users. At the time, Meta claimed that it was open only to persons aged 13 and older with a valid email address; however, on information and belief, Meta did not in fact require verification of a user's age or identity and did not actually verify users' email addresses, such that underage users could easily register an account with and access Facebook.

118. Since its earliest forms, Facebook has undergone a campaign of design alterations aimed at increasing user engagement and platform growth, without regard to user safety.

2. The Instagram Product

119. Instagram is a social media platform that launched in 2010, which Meta acquired for \$1 billion in April 2012.

120. Instagram enables users to share photos and videos with other users and to view other users' photos and videos. These photos and videos appear on users' Instagram "feeds," which are virtually bottomless, scrollable lists of content.

121. After being acquired by Meta, Instagram experienced exponential user growth, expanding from approximately 10 million monthly active users in September 2012 to more than one billion monthly active users worldwide today, including approximately 160 million users in the United States.⁹⁹

⁹⁹ S. Dixon, *Number of Instagram Users Worldwide from 2020 to 2025 (in Billions)*, Statista (May 23, 2022), <https://www.statista.com/statistics/183585/instagram-number-of-global-users/>.

122. Instagram's user growth was driven by design and development changes to the Instagram platform that increased engagement at the expense of the health and well-being of Instagram's users—especially the children using the platform.

123. For example, in August 2020, Instagram began hosting and recommending short videos to users, called Reels.¹⁰⁰ Like TikTok, Instagram allows users to view an endless feed of Reels that are recommended and curated to users by Instagram's algorithm.

124. Instagram has become the most popular photo sharing social media platform among children in the United States—approximately 72 percent of children aged 13–17 in the United States use Instagram.¹⁰¹

3. Meta's Products are Addictive and Harmful to Youth

125. Meta's products, as originally conceived, ostensibly functioned like enormous virtual bulletin boards, where content was published by authors. But Meta's products have evolved over time with the addition of numerous features and products designed by Meta to engage and addict users. The most visible of these are curated recommendations, which are pushed to each user in a steady stream as the user navigates the website, and in notifications sent to the user's smartphone and email addresses when the user is disengaged with the platform. These proprietary Meta products include, but are not limited to, News Feed (a newsfeed of stories and posts published on the platform, some of which are posted by your connections, and others that are suggested for you by Meta), People You May Know (introductions to persons with common connections or background), Suggested for You, Groups You Should Join, and Discover (recommendations for Meta groups to join).

¹⁰⁰ *Introducing Instagram Reels*, Instagram (Aug. 5, 2020), <https://about.instagram.com/blog/announcements/introducing-instagram-reels-announcement>.

¹⁰¹ Katherine Schaeffer, *7 Facts About Americans and Instagram*, Pew Rsch. Ctr. (Oct. 7, 2021), <https://www.pewresearch.org/fact-tank/2021/10/07/7-facts-about-americans-and-instagram/>.

126. These curated and bundled recommendations are developed through sophisticated algorithms. As distinguished from the earliest search functions that were used to navigate websites during the Internet’s infancy, Meta’s algorithms are not based exclusively on user requests or even user inputs. Meta’s algorithms combine the user’s profile (e.g., the information posted by the user on the platform) and the user’s dossier (the data collected and synthesized by Meta to which Meta assigns categorical designations), make assumptions about that user’s interests and preferences, make predictions about what else might appeal to the user, and then make very specific recommendations of posts and pages to view and groups to visit and join based on rankings that will optimize Meta’s key performance indicators.

127. A user’s “feed” on both Facebook and Instagram is comprised of an endless series of photos, videos, text captions, and comments posted by accounts that the user follows, along with advertising and content specifically selected and promoted by Instagram and Facebook.

128. Instagram also features a “discover” page where a user is shown an endless feed of content that is selected by an algorithm designed by Instagram based upon the users’ data profile: demographics, prior activity in the platform, and other data points. Meta has added similar features to Facebook on the product’s “menu” and “watch” sections.

129. Engineered to meet the evolving demands of the “attention economy,”¹⁰² a term used to describe the supply and demand of a person’s attention, which is a highly valuable commodity for internet websites, in February 2009, Meta introduced perhaps its most conspicuous effort to addict users—intermittent variable rewards (“IVR”): its “Like” button; Instagram launched that same year and came ready-made with a like function shaped as a heart. Additional features of Meta’s IVR include its delay-burst notification system, comments, posts, shares, and

¹⁰² The business model is simple: The more attention a platform can pull from its users, the more effective its advertising space becomes, allowing it to charge advertisers more.

other dopamine-triggering content. Instagram's notification algorithm delays notifications to deliver them in spaced-out, larger bursts. Facebook likely uses a similar feature. As introduced above, these designs take advantage of users' dopamine-driven desire for social validation and optimizes the balance of negative and positive feedback signals to addict users.

130. IVR is a design used to addict a user to an activity by spacing out dopamine triggering stimuli with dopamine gaps—a design that allows for anticipation and craving to develop and strengthens the addiction with each payout. The easiest way to understand this term is by imagining a slot machine. The user pulls the lever (intermittent action) with the hope of winning a prize (variable reward). Slot machines distribute rewards on a calculated schedule (variance in timing and value of reward) to manipulate users' dopamine seeking systems and drive into addiction. In the same way, users refresh Defendants' feeds, endure the brief delay, and then see a new assortment of content. Users are notified on their devices throughout their days and nights and compulsively check the notification to learn if anyone has tagged them in a photo, mentioned them in a post, sent them a message, or liked, commented on, or shared either of their posts. As explained below, Meta (and, upon information and belief, all Defendants) space out notifications into multiple bursts (dopamine gaps), rather than notifying users in real time, to maximize the products' addictiveness.

131. Over the past decade or so, Meta has added features and promoted the use of auto-playing short videos and temporary posts on Facebook and Instagram, with the former being referred to as "Reels," while the latter is referred to as Instagram "Stories."

132. Facebook and Instagram notify users through text and email of activity that might be of interest, which is designed to and does prompt users to open Facebook and Instagram and be exposed to content selected by the products to maximize the length of time and amount of content

viewed by the user. Facebook and Instagram include many other harm causing features, as discussed below.

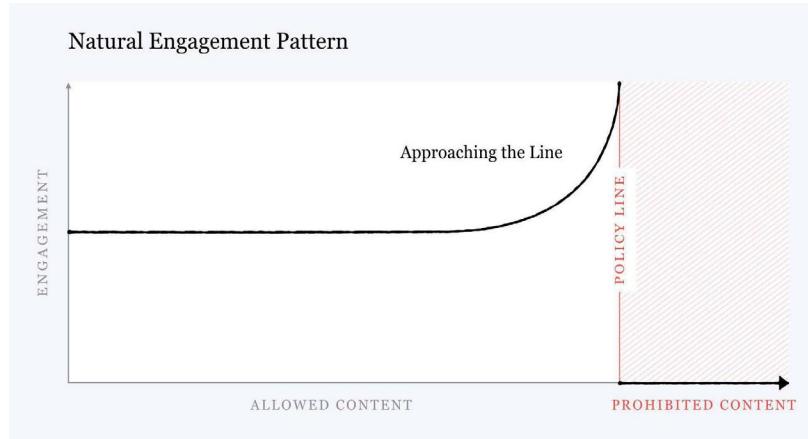
133. Equipped with ample information about the risks of social media, the ineffectiveness of its age-verification protocols, and the mental processes of teens, Meta has expended significant effort to attract preteens to its products, including substantial investments in designing products that would appeal to children ages 10-to-12. Meta views pre-teens as a valuable, unharnessed commodity, so valuable that it has contemplated whether there is a way to engage children during play dates.¹⁰³ Meta’s unabashed willingness to target children—in the face of its conscious, long-standing, plainly deficient age-verification protocols—demonstrates the depths to which Meta is willing to reach to maintain and increase its profit margin.

134. Faced with the potential for reduction in value due to its declining number of users, in or around early 2018, Meta revamped its interface to transition away from chronological ranking, which organized the interface according to when content was posted or sent, to prioritize Meaningful Social Interactions, or “MSI,” which emphasizes users’ connections’ interactions, e.g., likes and comments, and gives greater significance to the interactions of connections that appeared to be the closest to users. To effectuate this objective, Facebook developed and employed an “amplification algorithm” to execute engagement-based ranking, which considers a post’s likes, shares, and comments, as well as a respective user’s past interactions with similar content, and exhibits the post in the user’s newsfeed if it otherwise meets certain benchmarks. The algorithm covertly operates on the proposition that intense reactions invariably compel attention. As it measures reactions and contemporaneously immerses users in the most reactive content, and

¹⁰³ Georgia Wells and Jeff Horwitz, *Facebook’s Effort to Attract Preteens Goes Beyond Instagram Kids, Documents Show* (2021), <https://www.wsj.com/articles/facebook-instagram-kids-tweens-attract-11632849667>.

negative content routinely elicits passionate reactions, the algorithm effectively works to steer users toward the most negative content.

135. Meta CEO Zuckerberg publicly recognized this in a 2018 post, in which he demonstrated the correlation between engagement and sensational content that is so extreme that it impinges upon Meta's own ethical limits, with the following chart:¹⁰⁴



136. The algorithm controls what appears in each user's News Feed and promotes content that is objectionable and harmful to many users. In one internal report, Meta concluded that “[o]ur approach has had unhealthy side effects on important slices of public content, such as politics and news,” with one data scientist noting that “[t]his is an increasing liability.” In other internal memos, Meta concluded that because of the new algorithm, “[m]isinformation, toxicity, and violent content are inordinately prevalent.”¹⁰⁵ Other documents show that Meta employees also discussed Meta's motive for changing its algorithm—namely, that users began to interact less with the platform, which became a worrisome trend for Meta's bottom line.¹⁰⁶ Meta found that the inflammatory content that the new algorithm was feeding to users fueled their return to the

¹⁰⁴ Mark Zuckerberg, *A Blueprint for Content Governance and Enforcement*, Facebook, <https://www.facebook.com/notes/751449002072082/> (last edited May 5, 2021).

¹⁰⁵ Keach Hagey, *Facebook tried to Make Its Platform a Healthier Place. It Got Angrier Instead* (Sept. 15, 2021, 9:26 AM ET), <https://www.wsj.com/articles/facebook-algorithm-change-zuckerberg-11631654215>.

¹⁰⁶ *Id.*

platform and led to more engagement, which, in turn, helped Meta sell more of the digital ads that generate most of its revenue. All told, Meta's algorithm optimizes for angry, divisive, and polarizing content because it will increase its number of users and the time users stay on the platform per viewing session, which thereby increases its appeal to advertisers, thereby increasing its overall value and profitability.

137. Upon information in belief, at least as far back as 2019, Meta initiated, *inter alia*, a Proactive Incident Response experiment, which began researching the effect of Meta on the mental health of today's youth.¹⁰⁷ Meta's own in-depth analyses show significant mental-health issues stemming from the use of Instagram among teenage girls, many of whom linked suicidal thoughts and eating disorders to their experiences on the app.¹⁰⁸ Meta's researchers have repeatedly found that Instagram is harmful for a sizable percentage of teens that use the platform. In an internal presentation from 2019, Meta researchers concluded that “[w]e make body issues worse for one in three teen girls,” and “[t]eens blame Instagram for increases in the rate of anxiety and depression.”¹⁰⁹ Similarly, in a March 2020 presentation posted to Meta's internal message board, researchers found that “[t]hirty-two percent of teen girls said that when they feel bad about their bodies, Instagram made them feel worse.”¹¹⁰ Sixty-six percent of teen girls and forty-six percent of teen boys have experienced negative social comparisons on Instagram.¹¹¹ Thirteen-and-one-half percent of teen-girl Instagram users say the platform makes thoughts of “suicide and self-injury”

¹⁰⁷ See *Protecting Kids Online: Testimony from a Facebook Whistleblower*, United States Senate Committee on Commerce, Science, & Transportation, Sub-Committee on Consumer Protection, Product Safety, and Data Security, <https://www.c-span.org/video/?515042-1/whistleblower-frances-haugen-calls-congress-regulate-facebook>.

¹⁰⁸ See Wall Street Journal Staff, *The Facebook Files*, WSJ (2021), <https://www.wsj.com/articles/the-facebook-files-11631713039?mod=bigtop-breadcrumb>.

¹⁰⁹ Georgia Wells, Jeff Horwitz, Deepa Seetharaman, *Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show* (Sept. 14, 2021, 7:59 AM ET), <https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739>.

¹¹⁰ *Id.*

¹¹¹ *Id.*

worse.¹¹² Seventeen percent of teen-girl Instagram users say the platform makes “[e]ating issues” worse.¹¹³ Instagram users are twice as likely to develop an eating disorder as those who do not use social media.

138. Meta is aware that teens often lack the ability to self-regulate. Meta is further aware that, despite the products’ adverse impact to teenage users’ well-being, the absence of impulse control often renders teens powerless to oppose the products’ allure. Meta is conscious of the fact that the platform dramatically exacerbates bullying and other difficulties prevalent within the high school experience, as the reach of the same now affects users within the ideally otherwise safe confines of the home. The advent of social media largely occurred after today’s parents became adults, the consequence being a large swath of parents that lack the context needed to appreciate the contemporary perils of Meta and Instagram, who are likewise ill-equipped to offer advice sufficient to effectively mitigate against it.

139. The shift from chronological ranking to the algorithm modified the social networking environment in such a way that it created a new iteration of the Meta experience, one that is profoundly more negative, one that exploits some of the known psychological vulnerabilities of Facebook’s most susceptible patronage, to wit, juveniles, resulting in a markedly enlarged threat to the cohort’s mental health and the related frequency of suicidal ideation.

140. Meta professes to have implemented protective measures to counteract the well-established dangers of its site’s customized, doggedly harmful content; however, its protocols apply only to content conveyed in English and removes only three-to-five percent of harmful content. Meta knows its quality-control and age-verification protocols are woefully ineffective, but Meta is either unwilling or incapable of properly managing its products. This is consistent with

¹¹² *Id.*

¹¹³ *Id.*

its established pattern of recognizing, and subsequently ignoring, the needs of its underage users and its obligation to create a suitable environment accessible only by its age-appropriate users, all in the interest of reaping obscene profit.

141. Instead of providing warnings at sign-up or during use, Meta provides no warning at all. Rather, the most accessible and full information regarding the mental and physical health risks of Meta's products comes from third parties. Meta has a "Youth Portal" website that does not appear to be widely promoted by Meta or even recommended to teen users on its products.¹¹⁴ Although the website claims to be comprehensive in its coverage of safety information for the products, it fails to directly address any of the features or health risks listed above.

142. Meta's Facebook and Instagram products contain the defects outlined above in Section IV.A.4, and the depth of Meta's internal research regarding the harmful impact and manipulation of its adolescent users through UX and algorithmic design will be uncovered further in the discovery phase of this litigation.

143. Sean Parker, Meta's first President, explained in a 2017 interview:

The thought process that went into building these applications, Facebook being the first of them, to really understand it was all about: "How do we consume as much of your time and conscious attention as possible?" And that means that we need to sort of give you a little dopamine hit every once in a while, because someone liked or commented on a photo or a post or whatever. And that's going to get you to contribute more content, and that's going to get you, you know, more likes and comments. It's a social-validation feedback loop that that it's exactly the kind of thing that a hacker like myself would come up with, because you're exploiting a vulnerability in human psychology. The inventors, creators — it's me, it's Mark [Zuckerberg], it's Kevin Systrom on Instagram, it's all of these people — understood this consciously. And we did it anyway.¹¹⁵

¹¹⁴ Safety Center, Facebook, <https://www.facebook.com/safety/youth> (last visited Sept. 20, 2022).

¹¹⁵ Mike Allen, *Sean Parker unloads on Facebook: "God only knows what it's doing to our children's brains,"* Axios (Nov. 9, 2017), <https://wwwaxios.com/2017/12/15/sean-parkerunloads-on-facebook-god-only-knows-what-its-doing-to-our-childrens-brains-1513306792>.

144. “God only knows what it’s doing to our children’s brains,” Mr. Parker went on to remark in the same interview.¹¹⁶

C. FACTUAL ALLEGATIONS AS TO SNAP

145. Snap owns and operates the Snapchat social media platform, an application that is widely marketed by Snap and available to users throughout the United States. Snapchat is a platform for engaging in text, picture, and video communication. The platform is also for editing and dissemination of content. The app contains a discovery page and a TikTok-like short video feed that algorithmically presents endless content to users. The primary objective of the platform is to maximize the frequency and length of each user’s viewing sessions. 59 percent of teenagers in the U.S. actively use Snapchat.¹¹⁷ 22 percent of parents in the U.S. know their child between the ages of 9 and 11 uses Snapchat.¹¹⁸

146. Snapchat was founded in 2011, by three Stanford college students, Reggie Brown, Evan Spiegel, and Bobby Murphy. It began as a simple application designed to allow a user to send a picture to a friend that would later disappear. Having gained only 127 users a few months after its launch, Snapchat began to market to high school students. Within the following year, Snapchat grew to more than 100,000 users.

147. Snapchat became well-known for the ephemeral nature of its content, which, in effect, removes all accountability for sent content. Specifically, Snapchat allows users to form groups and share posts or “Snaps” that disappear after being viewed by the recipients. However, the Snapchat social media product quickly evolved from there, as its leadership made design

¹¹⁶ *Id.*

¹¹⁷ Vogels et al., *supra*.

¹¹⁸ Schaeffer, *supra*.

changes and rapidly developed new product features intended to and successfully did increase Snapchat's popularity among minors.

148. In 2012, Snapchat added video capabilities to its product, pushing the number of Snaps to 50 million per day. In 2013, Snapchat added "Stories" and "Chat" features; in 2014, live video chat capabilities, text conversations, "Our Story," Geofilters, and Snapcash; in 2015, Discovery, QR code incorporation, and facial recognition software; and in 2016, Memories and Snapchat Groups.

149. By 2015, advertisements were pervasive on Snapchat, and by 2018, 99% of Snapchat's total revenue came from advertising. In 2022, Snap's revenue was approximately \$4.6 billion.¹¹⁹ Like Meta and Defendants in general, Snapchat decided to monetize its userbase, and changed its product in ways that made it more harmful for users yet resulted in increased engagement and profits for Snapchat. By 2015, Snapchat had over 75 million active users and was the most popular social media application amongst American teenagers in terms of number of users and time spent using the product.

150. To further expand its userbase, Snapchat incorporates several product features that serve no purpose other than to create dependency on Snapchat's social media product. These features, in turn, result in sleep deprivation, anxiety, depression, shame, interpersonal conflicts, and other serious mental and physical harms. Snapchat knows, or should know, that its product is harmful to adolescents, but, as with Defendants in general, it consistently opts for increased profit at the expense of the well-being of its clientele. Defendants' products are used by millions of children every day, children who have become addicted to these products because of their design and product features, to the point that parents cannot remove all access to the products without

¹¹⁹ Snap Inc. *Form 10-K* at 18 (Dec. 31, 2022), <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001564408/c22ae9bd-7418-456e-82d4-48129de1df54.pdf>.

minor users adamantly protesting, often engaging in self-harm, threatening hunger strikes and/or suicide, and other foreseeable consequences of withdrawal from these products, where such cessation would require professional intervention.

151. Snap has tailored every aspect of its Snapchat product to children rather than adults. Snap designed and implemented dangerous features in Snapchat that exploit children's need for social acceptance and rewards by pushing its users to maximize their use of and engagement with the app. Snap built Snapchat using manipulative techniques to compel young users to send an ever-increasing number of photographs and videos, and to reward users who maximize their engagement with elevated status. Snap also dangerously encourages adolescents to increase engagement on the app indiscriminately, pushing tools to share sensitive material with an ever-expanding group of friends and strangers.

152. Snapchat's design features cause its young users to suffer increased anxiety, depression, disordered eating, sleep deprivation, suicide, and other severe mental and physical injuries. Snap knows or should have known this. Snap intentionally designed Snapchat to prey on the neuropsychology and behavioral patterns of children to maximize their engagement and increase Snap's advertising revenue. Despite this knowledge, Snap continues to update its product and add features intentionally designed to entice, exploit, and addict kids, including Snap Streaks, trophies, social signifiers and reward systems, quickly disappearing messages, filters, lenses, and games.

153. Snap specifically promotes Snapchat to children because they are a key demographic for Snap's advertising business. In its first post on its website, Snapchat observed that “[t]o get a better sense of how people were using Snapchat and what we could do to make it better, we reached out to some of our users. We were thrilled to hear that most of them were high

school students who were using Snapchat as a new way to pass notes in class—behind-the-back photos of teachers and funny faces were sent back and forth throughout the day.”¹²⁰

154. Once Snap entices children to use its product, it uses a series of product features that are designed to addict children. In addition to the types of features discussed above, such as algorithmic recommendation, appearance altering image and video filters, and IVR notifications, Snapchat’s defective, addictive, harm-causing features also include (1) Snapchat streaks, (2) limited availability content (3) Trophies, (4) Snapscore, (5) Snapmap (6) image filters, (7) Spotlight, (8) general user interface, and (9) many other design features.

155. Snapchat streaks provide a reward to users based on how many consecutive days they communicate with another user. In other words, the longer two users are able to maintain a streak by exchanging a communication (a “snap”) at least once a day, the more rewarded the users are. The reward comes in the form of a cartoon emoji appearing next to the conversation within Snapchat’s interface. The longer the streak is maintained, the more exciting the emoji. Eventually, the emoji will change to a flame, and the number of days the streak has lasted will be positioned next to the flame. If the streak is about to end, the emoji changes to an hourglass to add pressure on users to maintain the streak and reengage with the platform:¹²¹

¹²⁰ Team Snapchat, *Let’s Chat*, Snapchat Blog at <http://blog.snapchat.com> (May 9, 2012), <https://web.archive.org/web/20120518003029/http://blog.snapchat.com:80/>.

¹²¹ Lizette Chapman, *Inside the Mind of a Snapchat Streaker*, Bloomberg (Jan. 30, 2017 at 5:00 AM CST), <https://www.bloomberg.com/news/features/2017-01-30/inside-the-mind-of-a-snapchat-streaker?leadSource=uverify%20wall>.

What Snapchat's Emojis Mean

-  Best Friends. This means you're each other's fave person to send Snaps.
-  You've been each other's best friend for 2 weeks+.
-  Gettin' serious. You've been each other's best friend for 2 months+.
-  Jealous much? Your best friend is also this person's best friend.
-  You're close. Not best-friends close, but you dig each other enough to count.
-  It's cool. You run in the same circles and share a close friend.
-  You have the upper hand. They send you more Snaps than anyone, but you send more Snaps to others.
-  Snapstreak. This appears with a # of days you and your friend have sent each other Snaps within 24 hours. Keep it going and watch the number (and pressure to continue) rise.
-  Warning! You both better send each other a Snap, or you'll kill your streak.

156. This feature hijacks teens' craving for social success and connectedness and causes teen users to feel pressure to use Snapchat daily or suffer social consequences. As some academics and mental health treatment providers have described, streaks "provide a validation for the relationship. . . . Attention to your streaks each day is a way of saying 'we're OK.' . . . The makers built into the app a system so you have to check constantly or risk missing out," said Nancy Colier, a psychotherapist and author of *The Power of Off*. "It taps into the primal fear of exclusion, of being out of the tribe and not able to survive."¹²² For teens, streaks can become a metric for self-

¹²² *Id.*

worth and popularity. By design, the user's mental wellbeing becomes connected to performance in defendant's product.¹²³ Some teenagers even provide their log in information to others to maintain their streaks for them when they know they will not be able to do so for a time.

157. Time limited content also creates a pressure to use the platform daily. Users can post stories that will only be available for 24 hours. Snap's Stories feature includes a running view count and list of viewers for each Story, both of which provide users with dopamine-triggering feedback that encourages users to make their Stories visible to everyone in order to increase the view count. The view count, view list, and ephemeral nature of Stories also reinforces the principle of reciprocity and compels users to monitor Stories, so they do not miss out. Many teens feel an obligation to view all their contact's stories each day before the content disappears, or risk hurting the feelings of friends or "missing out."

158. Trophies, recently renamed "Charms", are awarded to users based on actions performed in the app, such as reaching streaks of certain milestone lengths or using different portions of the app. Each trophy is a unique badge to display on a user's profile. Snap designed each of these features to function as rewards for increased engagement, exploit underage users' desire for social validation, and ultimately compel them to use Snapchat excessively. Because many of these rewards and scores are visible to others, these features tap into adolescents' deep-seated need for acceptance. By exploiting this need, Snap increases time spent engaging with its product and thereby its profits.

¹²³ Yael Klein, *How Snapchat Streaks Are Getting Teens Addicted to the App*, Evolve Treatment Centers, <https://evolvetreatment.com/blog/snapchat-streaks-addicted-teens/> (last visited Sept. 9, 2022) (quoting one teen, "having more streaks makes you feel more popular.").

159. All users receive a “Sapscore”, based on their total number of snaps sent and received. Users can see the scores of friends, causing blows to the self-esteem of many young users and an addictive drive to increase the score.

160. “Snap Map,” a feature of Snapchat that shows the location of other users on a map, also causes self-esteem and mental health damage to teens. The human desire to belong to an “ingroup” is powerfully connected to self-worth, especially within teens. In a recent study, young respondents reported that they check Snap Map to see where their friends were to avoid exclusion, followed by an increased amount of anxiety.

Snap Map allows users to view content constantly with minimal effort and to check the application to see what they potentially are missing out on. [A]dolescent users reported feeling “sad,” “inadequate,” and “isolated” after checking Snap Map, even if they were attempting to avoid these feelings in the first place. [P]articipants who were unsure of their friends’ whereabouts or felt excluded (the uncertain situation), were compelled to check Snap Map and reported experiencing higher levels of anxiety and low-self esteem after doing so. This evaluation of self-worth translates to the participant checking Snap Map to confirm or deny their beliefs, and then experiencing negative emotional responses after making a comparison to their friends’ location. Snap Map . . . [is] associated with increased feelings of jealousy and anger in users. Participants expressed how immediate access to locational information directly impacted their mood, especially when they saw something that confirmed their doubts. Something interesting to note is that even when participants were aware of the negative feelings that could arise after checking Snap Map, their desire to confirm or deny self-doubt exceeded concerns over these potential consequences.¹²⁴

161. Moreover, this feature can be dangerous for naïve users in that predators can easily locate targeted victims at any given moment.

¹²⁴ Jenna Sachs, *Psychological Repercussions of Location-Based Social Networks in Today’s Youth*, 9 Elon J. of Undergraduate Res. in Comm. 64, 73 (2018), <https://eloncdn.blob.core.windows.net/eu3/sites/153/2018/12/06-Sachs.pdf>.

162. Snapchat also includes many appearance changing and face altering image filters that have inflicted profound body image issues upon teenagers, especially females.

163. In November 2020, Snapchat launched “Spotlight.” This portion of the platform functions and appears nearly identical to TikTok, with similar addictive qualities and harm infliction. Snapchat also has a “Discover” page that presents a mosaic of algorithmically recommended content. Once a user subscribes to another user based on what they see on the Discover page, they can see the other user’s stories from that point forward. Unsurprisingly, one study of over 2,000 UK residents found 68 percent of respondents who used Snapchat reported that “the platform prevented them from sleeping.”¹²⁵

164. In addition to Snapchat’s in-app features, Snap also sends push notifications and emails to encourage addictive engagement and increase use. Notifications are triggered based on information Snap collects from, and about, its users. Snap “pushes” these communications to users excessively and at disruptive times of day. Snap has even designed the format of these notifications to pull users back onto its app by preying on their fear of missing out—never mind the consequences to their health and well-being.

165. Snap has intentionally and defectively designed its products so child users face significant navigational obstacles and hurdles when trying to delete or deactivate their Snapchat accounts, despite the ease with which a user can create one. For example, when a user elects to delete their account, they cannot do so on demand. The data and the account are preserved for 30 days. In addition, after initiating the deletion process, the user is presented with a black screen depicting a crying emoji and a message that reads, “Your account will be deactivated, which means friends won’t be able to contact you on Snapchat. You’ll also lose any Chats you’ve saved and

¹²⁵ Frazer Deans, *Curb Your Snapchat Addiction*, <https://www.wholesome.design/advent-2018/2-curb-your-snapchat-addiction/> (last visited Sept. 20, 2022).

Snaps and Chats you haven't opened."¹²⁶ This cumbersome process prioritizes user retention and continued use over the wellbeing of Snapchat's users.

166. Snapchat contains many if not all of the defects outlined above in Section IV.A.4, and the depth of Snap's internal data regarding the harmful impact and ingenious manipulation of its users through UX and algorithmic design will be uncovered further in the discovery phase of this litigation.

D. FACTUAL ALLEGATIONS AS TO TIKTOK

167. TikTok is known as a video-sharing application, where users can create, share, and view short video clips, and is highly integrated with its Chinese parent company ByteDance. TikTok hosts a variety of short-form user videos from genres/themes like pranks, stunts, DIY ("Do It Yourself") tutorials, satire, opinions, dances, and entertainment, with durations from 15 seconds to ten minutes.

168. TikTok's predecessor, Musical.ly, launched in 2014 as a place where people could create and share 15-second videos of themselves lip-syncing or dancing to music.¹²⁷

169. In 2017, ByteDance launched an international version of a similar platform that also enabled users to create and share short lip-syncing videos that it called TikTok.¹²⁸

170. That same year, ByteDance acquired Musical.ly to leverage its young user base in the United States, of almost 60 million monthly active users.¹²⁹

¹²⁶ See Snapchat Support, *How do I delete my Snapchat account?*, <https://support.snapchat.com/en-US/a/delete-my-account1>

¹²⁷ Biz Carson, *How a failed education startup turned into Musical.ly, the most popular app you've probably never heard of*, Bus. Insider (May, 28, 2016), <https://www.businessinsider.com/what-is-musically-2016-5>.

¹²⁸ Paresh Dave, *China's ByteDance scrubs Musical.ly brand in favor of TikTok*, Reuters (Aug. 1, 2018), <https://www.reuters.com/article/us-bytedance-musically/chinas-bytedance-scrubs-musical-ly-brand-in-favor-of-tiktok-idUSKBN1KN0BW>. Case 2:23-cv-00172-SMM Document 1 Filed 01/26/23 Page 56 of 111

¹²⁹ Liza Lin & Rolfe Winkler, *Social-Media App Musical.ly Is Acquired for as Much as \$1 Billion; With (footnote continued)*

171. Months later, the products were merged under the TikTok brand.¹³⁰

172. The primary feature of TikTok is its “For You” page, which presents users with an endless stream of algorithmically selected content. The primary objective of the platform is to maximize the frequency and length of each user’s viewing sessions. 67 percent of teenagers in the U.S. actively use TikTok.¹³¹ 30 percent of parents in the U.S. know their child between the ages of 9 and 11 uses TikTok.¹³² TikTok has been downloaded more than 130 million times in the United States and is regarded as the most-visited website in 2021 according to some metrics. In July 2020, TikTok reported that more than one-third of its 49 million daily users in the United States were 14 or younger.¹³³

173. TikTok’s capture of the American youth market is no accident, but instead the result of a carefully executed campaign. Early on, Alex Zhu, one of TikTok’s creators, recognized that “[t]eenagers in the U.S. [were] a golden audience” for this emerging social media product.¹³⁴ To cash in on this gold, ByteDance implemented a series of product features designed to attract and addict young users. As Zhu explained in 2019, “[e]ven if you have tens of millions of users, you

¹³⁰ 60 million monthly users, startup sells to Chinese maker of news app Toutiao, Wall St. J. (Nov. 10, 2017), <https://www.wsj.com/articles/lip-syncing-app-musical-ly-is-acquired-for-as-much-as-1-billion-1510278123>.

¹³¹ Paresh Dave, *China’s ByteDance scrubs Musical.ly brand in favor of TikTok*, Reuters (Aug. 1, 2018), <https://www.reuters.com/article/us-bytedance-musically/chinas-bytedance-scrubs-musical-ly-brand-in-favor-of-tiktok-idUSKBN1KN0BW>.

¹³² Vogels et al., *supra*.

¹³³ Schaeffer, *supra*.

¹³⁴ Raymond Zhong & Sheera Frenkel, *A Third of TikTok’s U.S. Users May Be 14 or Under, Raising Safety Questions*, N.Y. Times (Aug. 14, 2020), <https://www.nytimes.com/2020/08/14/technology/tiktok-underage-users-ftc.html>.

¹³⁵ Paul Mozur, *Chinese Tech Firms Forced to Choose Market: Home or Everywhere Else*, N.Y. Times (Aug. 9, 2016), <https://www.nytimes.com/2016/08/10/technology/china-homegrowninternet-companies-rest-of-the-world.html>.

have to keep them always engaged.”¹³⁵ This engagement has come at the cost of young users’ health.

174. The initial iteration of TikTok allowed users to lip sync pop music by celebrities who appealed primarily to teens and tweens (e.g., Selena Gomez and Ariana Grande). It labeled folders with names attractive to youth (e.g., “Disney” and “school”); and included in those folders songs such as “Can You Feel the Love Tonight” from the movie “The Lion King,” “You’ve Got a Friend in Me” from the movie “Toy Story,” and other renditions covering school-related subjects or school-themed television shows and movies.¹³⁶

175. ByteDance also specifically and intentionally excluded videos that would not appeal to young Americans, instructing TikTok moderators that videos of “senior people with too many wrinkles” should not be permitted on users’ “For You” pages because such content was “much less attractive [and] not worth[] . . . recommend[ing].”¹³⁷

176. Even TikTok’s sign-up process demonstrates that young users are what ByteDance values most. In 2016, the birthdate for those signing up for the app defaulted to the year 2000 (i.e., 16 years old).¹³⁸

177. TikTok’s revenue is heavily dependent on the amount of time users spend on the product and their level of engagement. The more time users spend on TikTok, the more advertising revenue TikTok reaps. Upon knowledge, information, and belief, formed after a reasonable inquiry

¹³⁵ Biz Carson, *How A Failed Education Startup Turned into Musical.ly, The Most Popular App You’ve Probably Never Heard Of*, Bus. Insider (May 28, 2016), <https://www.businessinsider.com/what-is-musically-2016-5> (emphasis added).

¹³⁶ Complaint for Civil Penalties, Permanent Injunction, and Other Equitable Relief (“Musical.ly Complaint”) at 8, ¶¶ 26–27, *United States v. Musical.ly*, 2:19-cv-01439-ODW-RAO (C.D. Cal. Feb. 27, 2019) ECF No. 1.

¹³⁷ Sam Biddle et al., *Invisible Censorship: TikTok Told Moderators to Suppress Posts by “Ugly” People and the Poor to Attract New Users*, Intercept (Mar. 15, 2020), <https://theintercept.com/2020/03/16/tiktok-app-moderatorsusers-discrimination/>.

¹³⁸ Melia Robinson, *How to Use Musical.ly, The App With 150 million Users That Teens Are Obsessed With*, Bus. Insider (Dec. 7, 2016), <https://www.businessinsider.com/how-to-use-musically-app-2016-12>.

under the circumstances, TikTok has designed its algorithms to addict users through advanced analytics that create a variable reward system, thereby causing users to spend increased amounts of time on the product. Upon opening the TikTok application, users are automatically shown an endless stream of videos selected by an algorithm(s). Further, TikTok markets itself as an artificial intelligence company:

The most obvious clue is right there when you open the app: the first thing you see isn't a feed of your friends, but a page called 'For You.' It's an algorithmic feed based on videos you've interacted with, or even just watched. It never runs out of material. It is not, unless you train it to be, full of people you know, or things you've explicitly told it you want to see. It's full of things that you seem to have demonstrated you want to watch, *no matter what you actually say you want to watch* . . . Imagine a version of Facebook that was able to fill your feed before you'd friended a single person. That's TikTok.¹³⁹

178. TikTok's algorithms are designed to begin working the minute a user opens the app. The FYP shows the user a single, full-screen stream of videos, then records how the user reacts. "A second of viewing or hesitation indicates interest; a swipe suggests a desire for something else."¹⁴⁰ With each data point collected, TikTok's algorithm winnows a mass of content to a single feed, continually refined to keep users engaging often and at length.

179. TikTok's powerful machine-learning algorithms dictate the content of each user's FYP. An estimated 90-95% of the content viewed on TikTok comes from its algorithms (as opposed to user selection), the highest among Defendants' products.¹⁴¹

¹³⁹ John Herman, *How TikTok is Rewriting the World*, N.Y. Times (Mar. 10, 2019), <https://www.nytimes.com/2019/03/10/style/what-is-tik-tok.html> (emphasis added).

¹⁴⁰ *Investigation: How TikTok's Algorithm Figures Out Your Deepest Desires*, Wall St. J. (Jul. 21, 2021), <https://www.wsj.com/video/series/inside-tiktoks-highly-secrective-algorithm/investigationhow-tiktok-algorithm-figures-out-your-deepest-desires/6C0C2040-FF25-4827-8528-2BD6612E3796>; *see also How TikTok recommends videos #ForYou*, TikTok Newsroom, <https://newsroom.tiktok.com/en-us/how-tiktok-recommends-videos-for-you>.

¹⁴¹ *Inside TikTok's Algorithm: A WSJ Video Investigation*, Wall St. J. (July 21, 2021), <https://www.wsj.com/articles/tiktok-algorithm-video-investigation-11626877477>.

180. The algorithm encourages use of the product, regardless of whether that use is enjoyable or healthy. From TikTok’s perspective, it doesn’t matter whether you’re engaging with a video because you’re horrified or angry or upset—the engagement itself is the end goal.

181. As the algorithm continues to refine what users see, they are “more likely to encounter harmful content.”¹⁴² Indeed, TikTok’s quest to monopolize user attention often forces users down “rabbit holes” of harmful content. Users end up in these rabbit holes, and become trapped in them, because TikTok has optimized its algorithm’s design for retention and time spent on the app.¹⁴³ TikTok wants to keep users coming back as often as possible for as long as possible.

182. TikTok’s algorithms often work in concert with other social media products, like Meta’s. A teen may learn about a harmful topic through Meta’s recommendation technologies on Instagram, which is feasibly subsequently identified by TikTok’s algorithm(s), and TikTok will then amplify and promote the same harm through a series of how-to videos. Like Meta, TikTok has tried to boost engagement and keep young users hooked to its social media product by any means necessary. Indeed, TikTok similarly sends push notifications and emails to encourage addictive behavior, to increase use of their product. TikTok’s communications are triggered through information its algorithms collect about users, communications that are then “pushed” to users frequently throughout the day.

183. Other product features that work in combination to cause addiction and other harms include: (1) a platform-imposed limit to the length of video content. Initially, the maximum video time was 60 seconds. The limit was later increased to 3 minutes and is currently 10 minutes. This limit is imposed to keep users in a flow-like focused state involving variety of content and variable

¹⁴² Ben Smith, *How TikTok Reads Your Mind*, N.Y. Times (Dec. 5, 2021), <https://www.nytimes.com/2021/12/05/business/media/tiktok-algorithm.html>.

¹⁴³ Kaitlyn Tiffany, *I’m Scared of the Person TikTok Thinks I Am*, The Atlantic (June 21, 2021), <https://www.theatlantic.com/technology/archive/2021/06/your-tiktok-feed-embarrassing/619257/>.

rewards. A user is more likely to become bored and end their session during a long video than during several varying videos. Video length limits in defendants' products have conditioned users to have a shorter attention span across years of use. (2) Until a subsequent change, the TikTok app sent notifications to the devices of children well after normal bedtime hours, disrupting sleep patterns and causing psychological injury. Recently, TikTok reportedly stopped the platform from sending notifications to users between the age of 13 and 15 after 9 p.m. (3) The interface of TikTok positions buttons on the bottom right of the screen, to avoid the milliseconds of delay of discomfort that could disrupt the flow-like state of right-handed users tapping the like or comment buttons if placed elsewhere on the screen. (4) Unlike other products, TikTok continues to play a video's audio, and the top quarter of the video, while users view comments on the video. This design decision avoids disrupting a user's heightened focused "flow-state" of consuming TikTok content. (5) TikTok's interface places buttons and profiles overlaid on top of the videos, rather than in a separate area. This design prevents there from being any barrier between videos (such as a horizontal bar across the screen on the bottom of one video and on top of the next) and prevents users from having any pause time between videos to evaluate whether they should continue using the app in that moment before more algorithmically selected content is played on their screen. (6) Videos automatically start playing as a user scrolls. Videos automatically restart once they conclude. In some circumstances, such as when a user sends a link of a video on TikTok to another user that views it in a web browsing app, the next video after that video will automatically play without the user scrolling. (7) Upon opening the app, users' view of the first video loaded is obstructed with a message saying, "swipe for more" and a graphic of a hand and figure swiping up. The user must scroll down to see an unobstructed video. This design feature trains users to

reflexively scroll to the next video once one video ends. Thus, addiction is initiated by the app before the user even sees the first piece of content.

184. As research conducted by the Brown University School of Public Health has determined, these features work in concert to lull users into a hypnotic, hyper-focused “flow-like state”:

[T]he infinite scroll and variable reward pattern of TikTok likely increase the addictive quality of the app as they may induce a flow-like state for users that is characterized by a high degree of focus and productivity at the task at hand[]. Once immersed in the flow-like state, users may experience a distorted sense of time in which they do not realize how much time has passed. Furthermore, the app interface itself is straightforward and user-friendly, with only a limited number of buttons and sections of the app for users to navigate, which further enables entrance into “flow.” . . . When they play, they consume the entire device screen, which creates an immersive experience for users. . . . Although the similarity may not be immediately evident, analysis of social media apps reveals that they are designed to function like slot machines — the “swipe down” feature required to refresh one’s feed mirrors pulling a slot machine lever, and the variable pattern of reward in the form of entertaining videos on TikTok simulates the intermittent reward pattern of winning or losing on a slot machine; this pattern keeps individuals engaged under the impression that the next play might be “the one.” . . . Provided that social media apps are functionally akin to slot machines, it is likely that the use of these apps is just as addictive as slot machines and fosters social media addiction, much like how slot machines contribute to gambling addiction.¹⁴⁴

185. Other researchers have compared the fine-tuned TikTok experience to hypnosis. “You’ll just be in this pleasurable dopamine state, carried away. It’s almost hypnotic, you’ll keep watching and watching. . . . You keep scrolling, she says, because sometimes you see something you like, and sometimes you don’t. And that differentiation—very similar to a slot machine in

¹⁴⁴ *What Makes TikTok so Addictive?: An Analysis of the Mechanisms Underlying the World’s Latest Social Media Craze*, Brown Undergraduate J. of Pub. Health (2021), <https://sites.brown.edu/publichealthjournal/2021/12/13/tiktok/>.

Vegas—is key.”¹⁴⁵ TikTok also provides its own set of beauty enhancing filters, which cause insecurities and psychological injury in teens leading to body dysmorphia, eating disorder, self-harm, and in more severe cases, suicide.

186. ByteDance designed TikTok with image-altering filters that harm users. These filters allow children to artificially change their appearance, for example by lightening their skin and eyes, giving them glowing tan skin, changing facial structure, or giving them larger lips or fluttering eyelashes.

187. Young people often then compare the filtered images to their real-life appearance, developing a negative self-image based on unrealistic, artificial images.¹⁴⁶ Many young girls use image-altering filters every day, harming their mental health. Those filters subconsciously make girls feel imperfect and ugly, “reduc[ing] their self-compassion and tolerance for their own physical flaws.”¹⁴⁷

188. So compelling is the desire to resemble more closely the filtered ideal that there are online tutorials explaining how to recreate certain filters using makeup. Children’s idealization of their filtered image is externally reinforced when the filtered images receive more likes, comments, and other interaction. Young people also compare these interaction “scores” to those of friends and celebrities who use filters, reinforcing the idea that beauty depends on matching a digital ideal.

189. Filters, retouching, and other editing tools available on TikTok often alter specific facial features, such as the shape of a person’s eyes and lips, in ways that would require medical intervention to alter in real life. Children, particularly girls, are thus striving for a standard of

¹⁴⁵ John Koetsier, *Digital Crack Cocaine: The Science Behind TikTok’s Success*, Forbes (Jan. 18, 2020 at 2:04 PM EST), <https://www.forbes.com/sites/johnkoetsier/2020/01/18/digital-crack-cocaine-the-science-behind-tiktoks-success/?sh=4bcc645f78be>.

¹⁴⁶ Haines, *supra*.

¹⁴⁷ *Id.*

beauty that is functionally impossible to achieve, with every TikTok filter creating a test that they are doomed to fail.

190. Even if a user escapes the addictiveness of TikTok's design and decides to delete their account, ByteDance makes doing so a lengthy and complex undertaking. The deletion process is defectively designed to encourage users to retain their accounts, even if their stated reason for deletion is that the product is endangering their safety or health.

191. TikTok contains many if not all of the defects outlined above in Section IV.A.4, and the depth of ByteDance's internal data regarding the harmful impact and ingenious manipulation of its users through UX and algorithmic design will be uncovered further in the discovery phase of this litigation.

E. FACTUAL ALLEGATIONS AS TO GOOGLE (YOUTUBE)

192. YouTube is an American online video sharing social media product headquartered in San Bruno, California. YouTube is the second most visited website, after Google Search, and has more than 2.5 billion users per month who collectively watch more than one billion hours of videos on YouTube each day. Surveys by the Pew Research Center in 2022 found that 95% of American teenagers used YouTube and that one in five American teenagers reported that they used YouTube almost constantly.¹⁴⁸

193. Like Meta, YouTube earns the bulk of its YouTube revenue through advertisements. Its design allows YouTube to embed targeted advertising directly into the video clips that its users watch, as well as promote featured content.¹⁴⁹

¹⁴⁸ Vogels et al, *supra*.

¹⁴⁹ Andrew Beattie, *How YouTube Makes Money Off Videos*, Investopedia, Oct. 31, 2021, <https://www.investopedia.com/articles/personal-finance/053015/how-youtube-makesmoney-videos.asp>.

194. YouTube partners with channel owners who, upon crossing a viewership threshold, can elect to monetize the channel to deliver advertisements to viewers. YouTube then takes a 45% cut of the advertising revenue and passes the rest to the channel.¹⁵⁰ YouTube also offers systems, policies, and features to encourage creators to post more content and earn rewards that can be converted into cash.

195. Moreover, advertising on YouTube's channels can either be contextual (informed by the particular channel or video) or behavioral (informed by the behavior of the device owner as tracked across different websites, apps, and devices). YouTube has long allowed channel owners to turn off default behavioral advertising and serve instead contextual advertising that does not track viewers, but vanishingly few content creators would elect to do so, in no small part because they receive warnings that disabling behavioral advertising can "significantly reduce your channel's revenue." In short, both YouTube and the channels have a strong financial incentive to use behavioral advertising.

196. In the fiscal years 2021 and 2022, YouTube generated total advertising revenues of \$28.8 billion and \$29.2 billion respectively. In stark contrast, the advertising revenues for fiscal year 2017 was \$8.1 billion.

197. YouTube uses several features and techniques to serve its goal of fueling usage by minors (and ad revenues to YouTube), and does so by fueling compulsive, addictive use of YouTube by minors and push users into dangerous "rabbit hole" experiences.

198. YouTube has developed proprietary algorithms and uses those to push content to users based on secret formulas YouTube refuses to disclose. In a 2021 post on YouTube's official

¹⁵⁰ See *In the Matter of Google LLC and YouTube, LLC* (F.T.C. Sept. 4, 2019), at 2 (citation omitted).

blog, Cristos Goodrow, VP of Engineering at YouTube, described the algorithm in general terms as follows,

To provide such custom curation, our recommendation system doesn't operate off of a 'recipe book' of what to do. It's constantly evolving, learning every day from over 80 billion pieces of information we call signals. That's why providing more transparency isn't as simple as listing a formula for recommendations, but involves understanding all the data that feeds into our system. A number of signals build on each other to help inform our system about what you find satisfying: clicks, watchtime, survey responses, sharing, likes, and dislikes.¹⁵¹

199. At the same time, YouTube has actual knowledge that its algorithms are promoting and amplifying violent and harmful content. According to YouTube and Google insiders, YouTube employees have notified leadership of these defects in the YouTube algorithm and, each time such notice is provided, they are told by YouTube leadership "Don't rock the boat."¹⁵² In other words, YouTube is prioritizing engagement over user safety, despite actual knowledge of the harms it is causing.

200. According to YouTube insiders, "The company spent years chasing one business goal above others: 'Engagement,' a measure of the views, time spent and interactions with online videos. Conversations with over twenty people who work at, or recently left, YouTube reveal a corporate leadership unable or unwilling to act on these internal alarms for fear of throttling engagement."¹⁵³

201. In 2012, YouTube concluded that the more people watched, the more ads it could run—and that recommending videos, alongside a clip or after one was finished, was the best way

¹⁵¹ Cristos Goodrow, *On YouTube's recommendation system*, Inside YouTube, Sept. 15, 2021, <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

¹⁵² Mark Bergen, *YouTube Executives Ignored Warnings, Letting Toxic Videos Run Rampant*, Bloomberg (Apr. 2, 2019), <https://www.bloomberg.com/news/features/2019-04-02/youtube-executives-ignored-warnings-letting-toxic-videos-run-rampant>.

¹⁵³ *Id.*

to keep eyes on the site. So YouTube, then run by Google veteran Salar Kamangar, set a company-wide objective to reach one billion hours of viewing a day, and rewrote its recommendation engine to maximize for that goal.¹⁵⁴

202. YouTube doesn't give an exact recipe for virality. But in its race to one billion hours, a formula emerged: Outrage equals attention. That is, YouTube re-designed itself to maximize addiction and stayed the course on programming its algorithm to prioritize engagement over user safety, despite its knowledge that such programming was harming a significant number of its users – including children and teens.

203. Nor is YouTube's algorithm-driven experience a small part of its functionality. On the contrary, "YouTube has described its recommendation system as artificial intelligence that is constantly learning which suggestions will keep users watching. These recommendations, it says, drive 70 percent of views, but the company does not reveal details of how the system makes its choices."¹⁵⁵

204. YouTube's automated recommendation system drives most of the experience users have on the platform by telling users, like Plaintiff's students, what they should watch next. It pushes videos to minor users and exposes them to content they otherwise would not see.

205. As with Defendant Meta, Snap, and TikTok, YouTube's algorithms determine the content that gets directed and/or populates its user experience on the YouTube social media platform. YouTube, not the creator, generates the URLs for the content and the resulting list of URLs pushed to users. This includes content sent directly from YouTube to its users, for YouTube's own purposes, and outside of any specific user search or request for such content. As

¹⁵⁴ *Id.*

¹⁵⁵ Max Fisher & Amanda Taub, *On YouTube's Digital Playground, an Open Gate for Pedophiles*, N.Y. Times (June 3, 2019), <https://www.nytimes.com/2019/06/03/world/americas/youtube-pedophiles.html>.

with Defendants Meta, Snap, and TikTok, YouTube knows that its algorithms are promoting and amplifying harmful content to children and teens and are operating with a degree of algorithmic discrimination that is particularly harmful to YouTube's most vulnerable user groups, like Plaintiff's students.

206. YouTube knows that underage users are on its YouTube platform and has deliberately designed its platform in a manner intended to evade parental authority and consent.

207. YouTube is used by many millions of children every day, including students in Plaintiff's schools, who have become addicted to it and suffered other severe mental harms as a result of how YouTube has designed, setup, and operates its platform design and features.

208. YouTube contains many if not all of the defects outlined above in Section IV.A.4, and the depth of Google's internal data regarding the harmful impact and ingenious manipulation of its users through UX and algorithmic design will be uncovered further in the discovery phase of this litigation.

F. PLAINTIFF-SPECIFIC ALLEGATIONS

1. The Effect of Social Media Use in Schools

209. The youth mental health crisis caused by social media in turn harms school districts, as educators are one of the main providers of mental health services for children.¹⁵⁶ Over 3.1 million children ages 12-17 received mental health services through an educational institution in 2020, more than any other non-specialty mental health service setting.¹⁵⁷

210. Most schools provide mental health treatment for students, but many struggle to sufficiently meet their students' needs. While 96 percent of public schools reported offering at

¹⁵⁶ *National Survey on Drug Use and Health*, SAMHSA (2019 & 1st & 4th Qs. 2020), <https://www.samhsa.gov/data/report/2020-nsduh-detailed-tables>.

¹⁵⁷ *Id.*

least one type of mental health service to their students in the 2021-22 school year,¹⁵⁸ 88 percent of public schools did not strongly agree that they could effectively provide mental health services to all students in need.¹⁵⁹ The most common barriers to providing effective mental health services are (1) an insufficient number of mental health professionals; (2) inadequate access to licensed mental health professionals; and (3) inadequate funding.¹⁶⁰ Even students report that their schools are unable to provide adequate mental health services. Less than a quarter of students in grades 6–12 report accessing counseling or psychological services when they are upset, stressed, or having a problem.¹⁶¹ When students do access mental health services, only 41 percent of middle schoolers and 36 percent of high schoolers are satisfied with the services they receive.¹⁶²

211. Schools are struggling to provide adequate mental health services, in part, because of the increase in students seeking these services. More than two-thirds of public schools reported an increase in the percent of students seeking mental health services from school since 2020.¹⁶³ During this period, adolescents increased their social media use and levels of excessive and problematic use of digital media.¹⁶⁴ These higher rates of social media use are related to higher “ill-being.”¹⁶⁵ This increase in adolescent social media use has caused an increase in adolescents experiencing mental health problems.

¹⁵⁸ *Roughly Half of Public Schools Report That They Can Effectively Provide Mental Health Services to All Students In Need*, Nat'l Ctr. Educ. Stat. (May 31, 2022), https://nces.ed.gov/whatsnew/press_releases/05_31_2022_2.asp.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *Insights From the Student Experience, Part I: Emotional and Mental Health* at 2, YouthTruth (2022), https://youthtruthsurvey.org/wp-content/uploads/2022/10/YouthTruth_EMH_102622.pdf.

¹⁶² *Id.*

¹⁶³ Nat'l Ctr. Educ. Stat. *supra*.

¹⁶⁴ Laura Marciano et al., *Digital Media Use and Adolescents' Mental Health During the Covid-19 Pandemic: A Systematic Review and Meta-Analysis*, Frontiers Pub. Health (Feb. 2022), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8848548/>.

¹⁶⁵ *Id.*

212. School staff agree that youth mental health is suffering. Over 75 percent of public schools reported an increase in staff expressing concerns about student depression, anxiety, and other disturbances since the start of the pandemic.¹⁶⁶ Students receiving mental health services in educational settings predominately do so because they “[felt] depressed,” “[t]hought about killing [themselves] or tried to” or “[felt] very afraid and tense.”¹⁶⁷

213. Anxiety disorders are also up, affecting 31.9 percent of adolescents between 13 and 18 years old.¹⁶⁸ “Research shows that untreated teenagers with anxiety disorders are at higher risk to perform poorly in school, miss out on important social experiences, and engage in substance abuse.”¹⁶⁹

214. Schools are struggling not only to provide students with mental health services but also to deliver an adequate education because of the youth mental health crisis. Students in grades 6–12 identify depression, stress, and anxiety as the most prevalent obstacles to learning.¹⁷⁰ Most middle school and high school students also fail to get enough sleep on school nights, which contributes to poor academic performance.¹⁷¹ These negative mental health outcomes are the most common symptoms of excessive social media use.

215. The youth mental health crisis has also caused a wide range of other behavioral issues among students that interfere with schools’ ability to teach. In 2022, 61 percent of public schools saw an increase in classroom disruptions from student misconduct compared to school

¹⁶⁶ Nat’l Ctr. Educ. Stat. *supra*.

¹⁶⁷ Rachel N. Lipari et al., *Adolescent Mental Health Service Use and Reasons for Using Services in Specialty, Educational, and General Medical Settings*, SAMHSA (May 5, 2016), https://www.samhsa.gov/data/sites/default/files/report_1973/ShortReport-1973.html.

¹⁶⁸ *Anxiety Disorders: Facts and Statistics*, Anxiety & Depression Ass’n Am., <https://adaa.org/understanding-anxiety/facts-statistics> (last updated Oct. 28, 2022).

¹⁶⁹ *Id.*

¹⁷⁰ YouthTruth *supra*.

¹⁷¹ Anne G. Wheaton et al., *Short Sleep Duration Among Middle School and High School Students—United States, 2015*, 67(3) Morbidity & Mortality Wkly. Rpt. 85–90 (Jan. 26, 2018), <http://dx.doi.org/10.15585/mmwr.mm6703a1>.

years before the pandemic.¹⁷² Fifty-eight percent of public schools also saw an increase in rowdiness outside of the classroom, 68 percent saw increases in tardiness, 27 percent saw increases in students skipping classes, 55 percent saw increases in the use of electronic devices when not permitted, 37 percent saw an increase in bullying, 39 percent saw an increase in physical fights between students, and 46 percent saw an increase in threats of fights between students.¹⁷³

216. Further exacerbating schools' struggle to teach is the fact students are not showing up to school. Indeed, student absenteeism has greatly increased. In the 2021–22 school year, 39 percent of public schools experienced an increase in chronic student absenteeism compared to the 2020–21 school year, and 72 percent of public schools saw increased chronic student absenteeism compared to school years before the pandemic.¹⁷⁴ Following suit, vandalism has increased in 2022, with 36 percent of public schools reporting increased acts of student vandalism on school property.¹⁷⁵ The youth mental health crisis spurred by Defendants products produces absenteeism and vandalism.

217. School districts have borne increased costs and expenses in response to the youth mental health crisis. These costs include:

- a. hiring additional mental health personnel (41 percent of public schools added staff to focus on student mental health);¹⁷⁶
- b. developing additional mental health resources (46 percent of public schools created or expanded mental health programs for students, 27 percent added

¹⁷² 2022 *School Pulse Panel*, U.S. Dep't Educ., Inst. Educ. Sci. (2022), <https://ies.ed.gov/schoolsurvey/spp/>.

¹⁷³ *Id.*

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

student classes on social, emotional, and mental health and 25 percent offered guest speakers for students on mental health);¹⁷⁷

- c. training teachers to help students with their mental health (56 percent of public schools offered professional development to teachers on helping students with mental health);¹⁷⁸
- d. increasing disciplinary services and hiring additional personnel for disciplinary services in response to increased bullying and harassment over social media;
- e. addressing property damaged as a result of students acting out because of mental, social, and emotional problems Defendants' conduct caused;
- f. diverting time and resources from instruction activities to notify parents and guardians of students' behavioral issues and attendance;
- g. investigating and responding to threats made against schools and students over social media;
- h. updating its student handbook to address use of Defendants' products; and
- i. updating school policies to address the use of Defendants' products.

218. Plaintiff has incurred these costs as well, as elaborated below, in pursuit of its mission to educate and nurture the students in its community.

2. Impact of Social Media on Plaintiff

219. Plaintiff has been directly impacted by the mental health crisis among youth in its communities caused by Defendants' products.

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

220. In a survey of school districts by the Pennsylvania School Boards Association, 78.9% of superintendents reported that their biggest challenge relates to school safety and security was meeting the mental health needs of students. The biggest challenges in meeting the mental health needs of students included: (1) not enough mental health professionals for students, (2) connecting students to outside service providers, and (3) identifying students who are in need of mental health services.¹⁷⁹

221. “According to the Pennsylvania Youth Survey (PAYS), a biennial survey of school students in grades 6, 8, 10, and 12, . . . rates of mental health concerns and self-harm, including suicidal ideation and attempted suicide, have increased among youth in recent years. When asked about mental health concerns, 38.0% of Pennsylvania students report feeling sad or depressed most days – up from 31.7% in 2013. In 2019, 16.2% of surveyed youth reported seriously considering suicide within the past 12 months, while 12.9% made a suicide plan, and 9.7% attempted suicide – up from 7.6% in 2013. On the 2019 PAYS survey, 2.0% of students reported needing medical treatment for a suicide attempt.”¹⁸⁰

222. The suicide rate in Pennsylvania among people aged 15-24 increased from 9.4 suicides per 100,000 people in 2009 to 11.4 in 2020—a 21% increase over just 11 years.¹⁸¹

223. Defendants must shoulder the financial burden of treating the growing youth mental crisis in Plaintiff’s schools spurred by their products.

¹⁷⁹ *State of Education*, Pennsylvania School Boards Associate (2019), <https://www.psba.org/wp-content/uploads/2019/02/StateofEducation-2019.pdf>.

¹⁸⁰ *Pennsylvania Statewide Suicide Prevention Plan*, Pennsylvania Department of Human Services (Sept. 2020), <https://www.dhs.pa.gov/Services/Mental-Health-PA/Documents/PA%20Statewide%20Suicide%20Prevention%20Plan.pdf>.

¹⁸¹ *Trend: Suicide - Ages 15-24 in Pennsylvania, United States*, United Health Foundation (2022), https://www.americashealthrankings.org/explore/annual/measure/Suicide/population/suicide_15-24/state/PA.

224. Indeed, there has been a surge in the proportion of youth in Plaintiff's community who say they cannot stop or control their anxiety, who feel so sad and hopeless that they stop doing the activities that they used to love, who are considering suicide, who made plans to commit suicide, and who have attempted to commit suicide.

225. These increases in anxiety, depression, and suicidal behavior have contributed to students increased behavioral problems in Plaintiff's schools.

226. The pandemic and corresponding increase in time youth spend on Defendants' products have intensified the youth mental health crisis and the behavioral issues Plaintiff's students are experiencing.

227. The current youth mental health crisis has led to a marked increase in the number of Plaintiff's students in crisis, acting out, and in need of mental health services.

228. Plaintiff has been directly impacted by the mental health crisis among youth in its community caused by Defendants' products.

229. To address the decline in students' mental, emotional, and social health, Plaintiff has been forced to divert resources and expend additional resources to:

- a. Address bullying and cyber-bullying through social media.
- b. Address student conflicts that originated through social media.
- c. Spend class time discussing appropriate social media use.
- d. Enforce policies to not access mobile phones during school.
- e. Address and discipline student cell phone violations.
- f. Address depression, anxiety, and trauma from students being exposed to unrealistic, idealistic, inaccurate, performative, fake, offensive, threatening, or dangerous content on social media that confuses and manipulates

students about serious issues, such as sexuality, body image, identity, depression, and suicide.

- g. Address bullying and social pressures that originated and spread through social media.
- h. Address exacerbation of issues related to students paying attention, engaging in class, and taking care of responsibilities while distracted by social media.
- i. Address students engaging in inappropriate behavior on social media or inspired by social media.
- j. Devote time to training staff about how to handle excessive or harmful social media usage.
- k. Devote time to engaging with parents about excessive or harmful social media usage.
- l. Devote time and resources of staff, nurses, and other student care professionals to care for mental and emotional needs of students affected by social media.

230. Plaintiff, to support the needs of its large student population, deepened from the injuries inflicted by Defendant's products, employs several staff members that focus on meeting the needs of students' health and wellbeing. Plaintiff's staff spend a substantial amount of their time on situations related to excessive social media use, accounting for hundreds of thousands of dollars in salaries and resources spent addressing the harms caused by social media.

231. The introduction and proliferation of Defendants' products into Plaintiff's student population has continually and increasingly disrupted and harmed Plaintiff, requiring their time

and resources to assist their students with the resulting mental health harms. All of Plaintiff's teachers, administrators, and staff have assisted in responding to this crisis, taking away time, energy, and resources which would otherwise be used for the enrichment of students.

232. Plaintiff requires significant and long-term funding to address the nuisance Defendants have created and amplified. Such funding should not fall at the foot of the legislature and, in turn, the public. Rather, Defendants must bear the burden of remedying their wrongs.

V. CAUSES OF ACTION

FIRST CAUSE OF ACTION—ALL DEFENDANTS

PUBLIC NUISANCE

233. Plaintiff incorporates by reference each preceding and succeeding paragraph as though set forth fully at length herein.

234. Plaintiff brings this claim under Pennsylvania public nuisance law as to all Defendants.

235. Under Pennsylvania law, a public nuisance is an unreasonable interference with a right common to the general public.

236. Plaintiff and their students have a right to be free from conduct that endangers their health and safety. Yet Defendants have engaged in conduct and omissions which unreasonably and injuriously interfered with the public health and safety in Plaintiff's community and created substantial and unreasonable annoyance, inconvenience, and injury to the public by negligently designing, developing, promoting, and maintaining their products with features and algorithms as described above that specifically are addictive, harmful and appeal to youth in Plaintiff's school districts, who were particularly unable to appreciate the risks posed by the product. Defendants' actions and omissions have substantially, unreasonably, and injuriously interfered with Plaintiff's

functions and operations and affected the public health, safety, and welfare of Plaintiff's community.

237. Each Defendant has created or assisted in the creation of a condition that is injurious to the health and safety of Plaintiff and their students and interferes with the comfortable enjoyment of life and property of Plaintiff's community.

238. Defendants' conduct has directly caused a severe disruption of the public health, order, and safety. Defendants' conduct is ongoing and continues to produce permanent and long-lasting damage.

239. This harm to Plaintiff and the public is substantial, unreasonable, widespread, and ongoing. It outweighs any potential offsetting benefit of the Defendants' wrongful conduct because Defendants' conduct violates Pennsylvania's public policy against inflicting injury to minors through defective products and deceptive business practices.

240. Defendants' conduct substantially and unreasonably interfered with public health, safety and the right to a public education in a safe and healthy environment. In that regard, and in other ways discussed herein, the public nuisance created or maintained by Defendants was connected to Plaintiff's property, including but not limited to school buildings.

241. The health and safety of the youth of Plaintiff's school districts, including those who use, have used, or will use Defendants' products, as well as those affected by others' use of Defendants' products, are matters of substantial public interest and of legitimate concern to Plaintiff, as well as to Plaintiff's community.

242. Defendants' conduct has affected and continues to affect a substantial number of people within Plaintiff's school districts and is likely to continue causing significant harm.

243. But for Defendants' actions and social media products, the youth mental health crisis that currently exists because of Defendants' conduct would have been significantly mitigated.

244. Defendants were the proximate cause of the harm suffered by Plaintiff as outlined. The injuries suffered by youth in Plaintiff's schools and the harms in turn suffered by Plaintiff were the foreseeable result of Defendants' defective and addictive social media products. Defendants knew or should have known that their conduct would create a public nuisance. Defendants knew or reasonably should have known that their design of defective and addictive social media products caused harm to youth and to municipalities, schools, and counties, including youth in Plaintiff's school districts and to Plaintiff themselves.

245. Thus, the public nuisance caused by Defendants was reasonably foreseeable, including the financial and economic losses incurred by Plaintiff.

246. Alternatively, Defendants' conduct was a substantial factor in bringing about the public nuisance even if a similar result would have occurred without it.

247. Plaintiff has taken steps to address the harm caused by Defendants' conduct, including, but not limited to, those listed in Section V above.

248. Fully abating the harm to youth mental health and education resulting from Defendants' conduct will require much more than these steps.

249. As detailed herein, Plaintiff has suffered special damage different in kind or quality from that suffered by the public in common. The damages suffered by Plaintiff have been greater in degree and different in kind than those suffered by the general public including, but not limited to, those arising from expending, diverting and increasing resources to provide mental health resources and personnel to students, as well as resolve student disciplinary issues.

250. Plaintiff therefore requests all the relief to which it is entitled in its own right and relating to the special damage or injury it has suffered, and not in any representative or parens patriae capacity on behalf of students, including damages in an amount to be determined at trial and an order providing for the abatement of the public nuisance that Defendants have created or assisted in the creation of, and enjoining Defendants from future conduct contributing to the public nuisance described above.

251. Defendants' conduct, as described above, was outrageous, malicious, vindictive, wanton, willful, oppressive, and showed reckless indifference to the rights and interests of others, including Plaintiff, thus entitling Plaintiff to punitive damages to punish Defendants for their conduct and to discourage Defendants and others from acting in a similar way in the future. Defendants regularly risk the lives and health of consumers and users of their products with full knowledge of the dangers of their products. Defendants made conscious decisions not to redesign, re-label, warn, or inform the unsuspecting public, including Plaintiff's students or Plaintiff. Defendants' willful, knowing, and reckless conduct therefore warrants an award of aggravated or punitive damages.

SECOND CAUSE OF ACTION—ALL DEFENDANTS
NEGLIGENCE

252. Plaintiff incorporates by reference each preceding and succeeding paragraph as though set forth fully at length herein.

253. At all relevant times, Defendants designed, developed, managed, operated, marketed, advertised, promoted, disseminated, made publicly available, and/or benefited from their products, and therefore owed a duty of reasonable care to avoid causing harm to those that used it, such as the students in Plaintiff's schools.

254. Each Defendant has breached, and continues to breach, its duties of care owed to Plaintiff through its affirmative malfeasance, actions, business decisions, and policies in the development, setup, management, maintenance, operation, marketing, advertising, promotion, supervision, and control of its respective products.

255. As alleged above, each Defendant knew, or in the exercise of reasonable care, should have known of the hazards and dangers of Defendants' products, specifically the addictive, compulsive, and excessive use of, Defendants' products, which foreseeably can lead to a cascade of negative effects, including but not limited to dissociative behavior, withdrawal symptoms, social isolation, damage to body image and self-worth, increased risk behavior, exposure to predators, sexual exploitation, suicidal ideation, and profound mental health issues for students including but not limited to depression, body dysmorphia, anxiety, suicidal ideation, self-harm, insomnia, eating disorders, death, and other harmful effects.

256. Each Defendant knew, or in the exercise of reasonable care, should have known that their conduct violated the duty of care to Plaintiff and their students, including providing accurate, true, and correct information concerning the risks of using Defendants' products and appropriate, complete, and accurate warnings concerning the potential adverse effects of using the social media platform.

257. Each Defendant knew, or in the exercise of reasonable care, should have known that their conduct could be remedied and abated.

258. As a direct and proximate cause of each Defendant's unreasonable and negligent conduct, Plaintiff has suffered and will continue to suffer harm, and is entitled to damages in an amount determined at trial.

259. Defendants made conscious decisions not to warn or inform the public, including Plaintiff and Plaintiff's students, even as the evidence mounted of the severe harms Defendants' products were inflicting on the nation's school children.

VI. DEMAND FOR A JURY TRIAL

260. Plaintiff hereby demands a trial by jury.

VII. PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment as follows:

261. Entering an Order that the conduct alleged herein constitutes a public nuisance under Pennsylvania law;

262. Entering an Order that Defendants are jointly and severally liable;

263. Entering an Order requiring Defendants to abate the public nuisance described herein and to deter and/or prevent the resumption of such nuisance;

264. Enjoining Defendants from engaging in further actions causing or contributing to the public nuisance as described herein;

265. Awarding equitable relief to fund prevention education and addiction treatment;

266. Awarding actual and compensatory damages;

267. Awarding punitive damages;

268. Awarding statutory damages in the maximum amount permitted by law;

269. Awarding reasonable attorneys' fees and costs of suit;

270. Awarding pre-judgment and post-judgment interest; and

271. Such other and further relief as the Court deems just and proper under the circumstances.

Dated: November 7, 2023

Respectfully submitted,

/s/ Daniel C. Levin

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